

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,2 b
Edition : 28.09.89
Replaces : 31.3.89
Test oil : ISO-4113

Combination no. : 0 401 876 761

Injection pump
Pump designation : PE6P120A320RS3206
EP type number : 0 411 826 773
Governor
Governor design. : RSV250...900P4A374-6
Governor no. : 0 421 833 283

Customer-spec. information
Customer : VOLVO-PENTA

Engine : TAMD122 A

1st version kW : 280.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 5.0...5.2
Del.quantity cm3/ : 1.7...2.3
100 s: (1.4...2.6)

Spread cm3 : 0.5
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...1.40

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1200
Del.quantity : 275.5...277.5
1000 : (272.5...280.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:

1st rack travel in: 10.70
Speed rpm : 925...935
2nd rack travel in: 4.00
Speed rpm : 985...1015
3rd rack travel in: 4.00
Speed rpm : 995...1025
4th rack travel in: 1130
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.6
Speed rpm : 250
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 380...440

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 700
Pressure hPa : 1200
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 700

1st pressure hPa : -
Rack travel in m: 8.60...8.80
2nd pressure hPa : 240
Rack travel in m: 8.90...9.00
3rd pressure hPa : 770
Rack travel in m: 11.20...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 177.0...179.0
1000 s: (174.0...182.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 925...935

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 260.0...280.0
1000 s: (250.0...290.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,2 b1
Edition : 28.09.89
Replaces : 11.11.88
Test oil : ISO-4113
Combination no. : 0 401 876 761A
Injection pump
Pump designation : PE6P120A32DRS3206
EP type number : 0 411 826 773
Governor
Governor design. : RSV250...900P4A374-6
Governor no. : 0 421 833 283

Customer-spec. information
Customer : VOLVO-PENTA

Engine : TAMD122 A

1st version kW : 280.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 5.0...5.2
Del.quantity cm3/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm3 : 0.5
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1200
Del.quantity : 290.5...292.5
1000 : (287.5...295.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:

1st rack travel in: 11.10
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1080...1110
3rd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1160
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.6
Speed rpm : 250
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 380...440

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 700
Pressure hPa : 1200
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 700

1st pressure hPa : -
Rack travel in m: 8.60...8.80
2nd pressure hPa : 360
Rack travel in m: 8.90...9.00
3rd pressure hPa : 1030
Rack travel in m: 11.70...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 177.0...179.0
1000 s: (174.0...182.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 925...935

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 8.60...8.80

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,2 b2
Edition : 02.10.89
Replaces : 9.12.88
Test oil : ISO-4113

Combination no. : 0 401 876 762

Injection pump
Pump designation : PE6P120A32ORS3206
EP type number : 0 411 826 773
Governor
Governor design. : RSV250...900P4A374-7
Governor no. : 0 421 833 284

Customer-spec. information
Customer : VOLVO-PENTA

Engine : TMD 122 A (HD)

1st version kW : 236.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness : 6.00X1.50X1000
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 5.0...5.2
Del.quantity cm3/ : 1.7...2.3
100 s: (1.4...2.6)

Spread cm3 : 0.5
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 212.5...214.5

1000 : (209.5...217.5)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 8.90
Speed rpm : 910...920
2nd rack travel in: 4.00
Speed rpm : 940...970
4th rack travel in: 1130
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.6
Speed rpm : 250
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 370...430

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 700
Pressure hPa : 900
Rack travel mm : 9.90...10.00

Measurement

Speed 1/min : 700

1st pressure hPa : -
Rack travel in m: 8.40...8.60
2nd pressure hPa : 430
Rack travel in m: 8.70...8.80
3rd pressure hPa : 610
Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 173.0...175.0
1000 s: (170.0...178.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 910...920

STARTING FUEL DELIVERY

Speed rpm : 100

A06

Rack travel in mm : 8.40...8.60

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 c
Edition : 02.10.89
Replaces : 9.6.89
Test oil : ISO-4113

Combination no. : 0 401 876 769

Injection pump
Pump designation : PE6P120A32ORS3206-2
EP type number : 0 411 826 784
Governor
Governor design. : RSV250..1300POA374-8
Governor no. : 0 421 833 320

Customer-spec. information
Customer : VOLVO-TRUCK

Engine : TAMD71A PD

1st version kW : 280.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.70...10.80

Del.quantity cm³/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 5.1...5.3
Del.quantity cm³/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm³ : 0.5
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension
Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1200
Del.quantity : 235.5...237.5
1000 : (232.5...240.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:

1st rack travel in: 9.70
Speed rpm : 1295...1305
2nd rack travel in: 4.00
Speed rpm : 1375...1405
3rd rack travel in: 4.00
Speed rpm : 1385...1415
4th rack travel in: 1500
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 26...34
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.7
Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 450...510

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 700
Pressure hPa : 1200
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 700

1st pressure hPa : -
Rack travel in m: 7.40...7.60
2nd pressure hPa : 960
Rack travel in m: 10.40...10.50
3rd pressure hPa : 485
Rack travel in m: 7.80...8.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 139.0...141.0
1000 s: (136.0...144.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1295...1305

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 7.30...7.50

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 12,0 a
Edition : 13.12.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 876 770

Injection pump
Pump designation : PE6P110A320LS3852
EP type number : 0 411 816 768
Governor
Governor design. : RSV400...900P1A544
Governor no. : 0 421 833 326

Customer-spec. information
Customer : LIEBHERR

Engine : D 9306T

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
 : (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 6- 3- 5- 2- 4

Phasing : 0-75-120-195-240-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 890

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 13.8...14.1

100 s: (13.5...14.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.3...1.8

100 s: (1.0...2.0)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 890

Del.quantity : 138.0...141.0

1000 : (135.5...143.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 10.70

Speed rpm : 930...940

2nd rack travel in: 4.00

Speed rpm : 945...975

3rd rack travel in: 4.00

Speed rpm : 950...980

4th rack travel in: 1120

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 5.4

Speed rpm : 400

Rack travel in mm : 5.80...6.00

Rack travel in mm : 2.00

Speed rpm : 450...510

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 890

Rack travel in m: 11.70...11.80

2nd speed rpm : 500

Rack travel in m: 11.70...11.90

3rd speed rpm : 420

Rack travel in m: 12.90...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm³/ : 140.0...144.0

1000 s: (137.0...147.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 930...940

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 150.0...170.0

1000 s: (146.0...174.0)

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.80...6.00

Del.quantity cm³/ : 13.0...18.0

1000 s: (10.5...20.5)

Spread cm³ : 4.50

1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 12,9 b
 Edition : 01.12.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 876 771
 Injection pump
 Pump designation : PE6P120A320RS3244
 EP type number : 0 411 826 788
 Governor
 Governor design. : RSV250...1000POA545
 Governor no. : 0 421 833 329

Customer-spec. information
 Customer : ENASA

Engine : 98 W1A0.MR4

1st version kW : 309.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40
 : (3.25...3.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 12.60...12.70
 Del.quantity cm3/ : 26.0...26.2
 100 s: (25.7...26.5)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : ?
 Del.quantity cm3/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 2.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 1400
 Del.quantity : 260.0...262.0
 1000 : (257.0...265.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 34...42

Testing:

1st rack travel in: 11.60
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1070...1100
3rd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 11...19
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 3.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 250
Rack travel in mm : 3.40...3.60
Rack travel in mm : 2.00
Speed rpm : 270...330

TORQUE CONTROL

Dimension a mm : 2.90
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.50...12.70
2nd speed rpm : 450
Rack travel in m: 12.60...12.70
3rd speed rpm : 300
Rack travel in m: 13.80...14.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1400
Rack travel mm : 12.60...12.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.40...8.80
2nd pressure hPa : 970
Rack travel in m: 11.60...11.70
3rd pressure hPa : 510
Rack travel in m: 9.30...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 141.5...143.5
1000 s: (138.5...146.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 150.0...170.0
1000 s: (146.0...174.0)
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 j
 Edition : 09.11.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 876 772
 Injection pump
 Pump designation : PE6P120A320RS3200
 EP type number : 0 411 826 766
 Governor
 Governor design. : RSV250...1000POA545-
 1
 Governor no. : 0 421 833 330

Customer-spec. information
 Customer : ENASA

Engine : 96 T1E0.MR4

1st version kW : 250.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness : 6.00X1.50X1000
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
 : (3.75...3.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.3...3.7

Del.quantity cm3/ : 1.7...2.3
 100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 236.0...238.0

1000 : (233.0...241.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 34...42

Testing:

1st rack travel in: 10.60
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1070...1100
3rd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 12...20
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 250
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 330...390

TORQUE CONTROL

Dimension a mm : 2.90
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 11.50...11.70
2nd speed rpm : 450
Rack travel in m: 11.60...11.70
3rd speed rpm : 300
Rack travel in m: 12.80...13.40

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.20...8.60
2nd pressure hPa : 790
Rack travel in m: 10.90...11.00
3rd pressure hPa : 540
Rack travel in m: 9.20...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 133.5...135.5
1000 s: (130.5...138.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...170.0
1000 s: (146.0...174.0)
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,6 t 1
Edition : 15.08.89
Replaces : 16.6.88
Test oil : ISO-4113

Combination no. : 0 401 878 706

Injection pump
Pump designation : PE8P110A320LS3813-10
EP type number : 0 411 818 712
Governor
Governor design. : RSV350...750POA824-2
Governor no. : 0 421 833 228

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM422

1st version kW : 173.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 14.2...14.4

100 s: (13.9...14.6)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0
Rack travel in mm : 7.2...7.5
Del.quantity cm3/ : 1.4...1.8
100 s: (1.1...2.0)
Spread cm3 : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 142.0...144.0
1000 : (139.5...146.5)
Spread cm3 : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 26...34

Testing:

1st rack travel in: 12.10
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 780...793
4th rack travel in: 1200
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 12...20
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.35

Testing:

Speed rpm : 100
Minimum rack trave: 17.50
Speed rpm : 350
Rack travel in mm : 7.20...7.50

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 1175...1185

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

:

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,6 p 2
 Edition : 15.08.89
 Replaces : 9.3.87
 Test oil : ISO-4113
 Combination no. : 0 401 878 708
 Injection pump
 Pump designation : PE8P120A320LS3816-10
 EP type number : 0 411 828 715
 Governor
 Governor design. : RSV450...1150POA823-
 1
 Governor no. : 0 421 833 243

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM422A

1st version kW : 243.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1130

Rack travel in mm : 11.00...11.10

Del. quantity cm³/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 450.0
 Rack travel in mm : 4.4...5.6
 Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1130
 Del. quantity : 158.0...160.0
 1000 : (155.0...163.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 38...46

25...35 1/min.

Testing:
1st rack travel in: 10.00
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1185...1205
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 15...23
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.5

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 450
Rack travel in mm : 4.40...4.70
Rack travel in mm : 2.00
Speed rpm : 450...520

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del. quantity cm³/ : 158.0...164.0
1000 s: (155.0...167.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

:

Engine-speed difference between 1 mm
regulated and control-rod travel 4 mm =

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 16,0 a
Edition : 13.12.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 878 714
Injection pump
Pump designation : PE8P110A520/4LS3853
EP type number : 0 411 818 720
Governor
Governor design. : RSV400...900P1A544
Governor no. : 0 421 833 326

Customer-spec. information
Customer : LIEBHERR

Engine : D 9308 TB

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness : 6.00X1.50X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
: (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 3-
5- 4

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 890

Rack travel in mm : 13.80...13.90

Del.quantity cm³/ : 17.5...17.8

100 s: (17.2...18.0)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm³/ : 1.3...1.8

100 s: (1.0...2.0)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 890

Del.quantity : 175.0...178.0

1000 : (172.5...180.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 12.80

Speed rpm : 930...940

2nd rack travel in: 4.00

Speed rpm : 945...975

3rd rack travel in: 4.00

Speed rpm : 950...980

4th rack travel in: 1120
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 5.4

Speed rpm : 400

Rack travel in mm : 5.80...6.00

Rack travel in mm : 2.00

Speed rpm : 450...510

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 890

Rack travel in m: 13.80...13.90

2nd speed rpm : 500

Rack travel in m: 13.80...14.00

3rd speed rpm : 420

Rack travel in m: 15.00...15.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm³/ : 172.0...176.0

1000 s: (169.0...179.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

Speed rpm : 930...940

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 150.0...170.0

1000 s: (146.0...174.0)

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.80...6.00

Del.quantity cm³/ : 13.0...18.0

1000 s: (10.5...20.5)

Spread cm³ : 4.50

1000 s: (7.50)

Remarks:

A20

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 18,3 i 4
Edition : 13.12.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 879 706

Injection pump
Pump designation : PE10P110A320LS3818-
11

EP type number : 0 411 819 706

Governor

Governor design. : RSV750...1050POA823-
7

Governer no. : 0 421 833 323

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 423

1st version kW : 251.0

Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 130...150

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

A21

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 10- 9- 4- 1- 8- 7
- 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
216-261-288-333

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 12.3...12.5

100 s: (12.0...12.7)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 750.0

Rack travel in mm : 6.1...6.6

Del.quantity cm3/ : 1.2...2.0

100 s: (0.9...2.2)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Del.quantity : 123.0...125.0

1000 : (120.5...127.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 32...40

Forage harvester

Testing:

1st rack travel in: 10.00
Speed rpm : 1060...1070
2nd rack travel in: 4.00
Speed rpm : 1085...1100
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...28
Setting point w/out bumper spring
Speed rpm : 750
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 750
Rack travel in mm : 6.10...6.60

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 102.0...108.0
1000 s: (99.0...111.0)
Spread cm³ : 6.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1060...1070

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

Engine-speed difference between 1 mm
regulated and control-rod travel 4 mm =
25...35 1/min.

APPLICATION

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a40
 Edition : 02.10.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 036 047
 Injection pump
 Pump designation : PES6P120A720/3LS470-
 3
 EP type number : 0 412 026 051
 Governor
 Governor design. : RQ300/1100PA679
 Governor no. : 0 421 801 228

Customer-spec. information
 Customer : MAN

Engine : D2866KUL

1st version kW : 265.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.60...12.70

Del.quantity cm³/ : 22.7...22.9

100 s: (22.4...23.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del.quantity cm³/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 227.0...229.0

1000 : (224.0...232.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.30
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 6.60
Speed rpm : 300
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 750
Rack travel in m: 13.30...13.50
2nd speed rpm : 1100
Rack travel in m: 12.30...12.40
3rd speed rpm : 965
Rack travel in m: 13.10...13.30
4th speed rpm : 1010
Rack travel in m: 12.70...13.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.60...12.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.70...8.90
2nd pressure hPa : 250
Rack travel in m: 9.00...9.10
3rd pressure hPa : 700
Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 190 (210)

FUEL DELIVERY CHARACTERISTICS

1st version

A24

Aneroid pressure h: 1000
Speed rpm : 1100
Del.quantity cm3/ : 228.0...232.0
1000 s: (225.0...235.0)
Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm3/ : 228.0...234.0
1000 s: (225.0...237.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 118.0...120.0
1000 s: (115.0...123.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 205.0...225.0
1000 s: (205.0...225.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7717

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a21
 Edition : 02.10.89
 Replaces : 29.1.88
 Test oil : ISO-4113
 Combination no. : 0 402 036 057
 Injection pump
 Pump designation : PES6P120A720/3LS470-
 2
 EP type number : 0 412 026 050
 Governor
 Governor design. : RQV300...1100PA700-1
 Governor no. : 0 421 813 528

Customer-spec. information
 Customer : MAN

Engine : D2866LF

1st version kW : 243.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.40...1.60

2nd speed rpm : 850

travel mm : 5.60...5.90

3rd speed rpm : 1100

travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 202.0...204.0

1000 : (199.0...207.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:

1st rack travel in: 9.60
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 14...22

Testing:

Speed rpm : 100
Minimum rack travel: 6.30
Speed rpm : 300
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 310...410

TORQUE CONTROL

Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 750
Rack travel in m: 11.30...11.40
2nd speed rpm : 1100
Rack travel in m: 10.60...10.70
3rd speed rpm : 850
Rack travel in m: 11.00...11.20
4th speed rpm : 975
Rack travel in m: 10.70...11.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.30...11.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 85
Rack travel in m: 9.30...9.40
3rd pressure hPa : 280

Rack travel in m: 10.50...10.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1100
Del.quantity cm3/ : 206.0...208.0
1000 s: (203.0...211.0)
Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm3/ : 208.0...214.0
1000 s: (205.0...217.0)
Aneroid pressure h: 280
Speed rpm : 500
Del.quantity cm3/ : 184.0...196.0
1000 s: (181.0...199.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 9.60
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 225.0...245.0
1000 s: (221.0...249.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a19
Edition : 02.10.89
Replaces : 7.12.87
Test oil : ISO-4113

Combination no. : 0 402 036 058

Injection pump
Pump designation : PES6P120A720/3LS470-
2

EP type number : 0 412 026 050
Governor
Governor design. : RQ300/1100PA684-1
Governor no. : 0 421 801 344

Customer-spec. information
Customer : MAN

Engine : D2866LF

1st version kW : 243.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del.quantity cm³/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 45

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 202.0...204.0

1000 : (199.0...207.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.70
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack trave: 6.30
Speed rpm : 300
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 750
Rack travel in m: 11.90...12.20
2nd speed rpm : 1100
Rack travel in m: 10.70...10.90
3rd speed rpm : 875
Rack travel in m: 11.80...12.00
4th speed rpm : 950
Rack travel in m: 11.20...11.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 85
Rack travel in m: 9.30...9.40
3rd pressure hPa : 280
Rack travel in m: 10.50...10.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

A28

Aneroid pressure h: 1000
Speed rpm : 1100
Del.quantity cm3/ : 205.0...209.0
1000 s: (202.0...212.0)
Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm3/ : 198.0...204.0
1000 s: (195.0...207.0)
Aneroid pressure h: 280
Speed rpm : 500
Del.quantity cm3/ : 184.0...196.0
1000 s: (181.0...199.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 225.0...245.0
1000 s: (221.0...249.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7756

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a31
 Edition : 24.11.89
 Replaces : 10.2.89
 Test oil : ISO-4113
 Combination no. : 0 402 036 073
 Injection pump
 Pump designation : PES6P120A720/3LS470-
 2
 EP type number : 0 412 026 050
 Governor
 Governor design. : RQ300/1100PA813-4
 Governor no. : 0 421 801 425

Customer-spec. information
 Customer : MAN

Engine : D2866KUH

1st version kW : 265.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 750

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 238.0...240.0

1000 : (235.0...243.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 750

Rack travel in mm : 15.5

Testing:

1st rack travel in: 10.50
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 6.80
Speed rpm : 300
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.50...11.60
2nd speed rpm : 750
Rack travel in m: 12.70...12.90
3rd speed rpm : 880
Rack travel in m: 12.30...12.50
4th speed rpm : 925
Rack travel in m: 11.70...12.00

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.50...8.70
2nd pressure hPa : 190
Rack travel in m: 8.90...9.00
3rd pressure hPa : 520
Rack travel in m: 11.10...11.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

B02

Aneroid pressure h: 1000
Speed rpm : 1100
Del.quantity cm3/ : 218.0...222.0
1000 s: (215.0...225.0)
Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm3/ : 238.0...244.0
1000 s: (235.0...247.0)
Aneroid pressure h: 520
Speed rpm : 500
Del.quantity cm3/ : 191.0...197.0
1000 s: (188.0...200.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 225.0...245.0
1000 s: (221.0...249.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7904

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a34
Edition : 24.11.89
Replaces : 30.9.88
Test oil : ISO-4113

Combination no. : 0 402 036 075

Injection pump
Pump designation : PES6P120A720/3LS470-
2

EP type number : 0 412 026 050
Governor
Governor design. : RQ300/1100PA813-5
Governor no. : 0 421 801 434

Customer-spec. information
Customer : MAN

Engine : D2866TUH

1st version kW : 213.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 18.5...18.7

100 s: (18.2...19.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 750

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 185.0...187.0

1000 : (182.0...190.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 750

Rack travel in mm : 15.5

Testing:

1st rack travel in: 9.80
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 6.80
Speed rpm : 300
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 390...430

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.00...11.10
2nd speed rpm : 750
Rack travel in m: 11.00...11.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 10.80...10.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.50...8.70
2nd pressure hPa : 190
Rack travel in m: 8.80...8.90
3rd pressure hPa : 350
Rack travel in m: 9.80...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1100
Del.quantity cm3/ : 190.0...196.0
1000 s: (187.0...199.0)
Aneroid pressure h: 350

B04

Speed rpm : 500
Del.quantity cm3/ : 164.0...176.0
1000 s: (161.0...179.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 205.0...225.0
1000 s: (201.0...229.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MAN-NR. 2-7892

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a35
Edition : 08.09.89
Replaces : 7.4.89
Test oil : ISO-4113

Combination no. : 0 402 036 076

Injection pump
Pump designation : PES6P120A720/3LS470-4
EP type number : 0 412 026 055
Governor
Governor design. : RQV300...1100PA700-5
Governor no. : 0 421 813 713

Customer spec. information
Customer : MAN

Engine : D2866LFG

1st version kW : 243.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.30...11.40

Del. quantity cm³/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.0

Del. quantity cm³/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.50...1.90

2nd speed rpm : 450

travel mm : 2.90...3.50

3rd speed rpm : 850

travel mm : 5.50...5.90

4th speed rpm : 1100

travel mm : 7.40...7.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 202.0...204.0
1000 : (199.0...207.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version:
Control Lever
position degrees: 48...56

Testing:

1st rack travel in: 9.90
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 14...22

Testing:

Speed rpm : 100
Minimum rack travel: 6.40
Speed rpm : 300
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 310...410

TORQUE CONTROL

Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 750
Rack travel in m: 11.60...11.70
2nd speed rpm : 1100
Rack travel in m: 10.90...11.00
3rd speed rpm : 865
Rack travel in m: 11.30...11.40
4th speed rpm : 985
Rack travel in m: 10.90...11.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.30...11.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 85

Rack travel in m: 9.30...9.40
3rd pressure hPa : 280
Rack travel in m: 10.50...10.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1100
Del.quantity cm3/ : 205.0...209.0
1000 s: (202.0...212.0)
Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm3/ : 198.0...204.0
1000 s: (195.0...207.0)
Aneroid pressure h: 280
Speed rpm : 500
Del.quantity cm3/ : 184.0...196.0
1000 s: (181.0...199.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 9.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 225.0...245.0
1000 s: (221.0...249.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7911

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a37
Edition : 24.11.89
Replaces : 24.5.89
Test oil : ISO-4113

Combination no. : 0 402 036 077

Injection pump
Pump designation : PES6P120A720/3LS470-
2

EP type number : 0 412 026 050
Governor
Governor design. : RQ300/1100PA813-6
Governor no. : 0 421 801 466

Customer-spec. information
Customer : MAN

Engine : D2866TUH/001

1st version kW : 213.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 19.5...19.7

100 s: (19.2...20.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.2...5.4
Del.quantity cm³/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm³ : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 750

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 750
Aneroid pressure h: 1000
Del.quantity : 195.0...197.0
1000 : (192.0...200.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 750

Rack travel in mm : 15.5

Testing:

1st rack travel in: 10.20
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 300
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 390...430

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 750
Rack travel in m: 11.60...11.70
2nd speed rpm : 1100
Rack travel in m: 11.50...11.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.20...11.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 190
Rack travel in m: 9.10...9.20
3rd pressure hPa : 350
Rack travel in m: 10.10...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1100
Del.quantity cm3/ : 204.0...208.0
1000 s: (201.0...211.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MAN-NR. 2-7893

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a38
 Edition : 15.12.89
 Replaces : 9.6.89
 Test oil : ISO-4113
 Combination no. : 0 402 036 078
 Injection pump
 Pump designation : PES6P120A720/3LS470-
 2
 EP type number : 0 412 026 050
 Governor
 Governor design. : RQ300/1100PA813-8
 Governor no. : 0 421 801 483

Customer-spec. information
 Customer : MAN

Engine : D2866LF/290

1st version kW : 213.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 183.0...185.0

1000 : (180.0...188.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 15.5

Testing:

1st rack travel in: 8.70
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 6.30
Speed rpm : 300
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 750
Rack travel in m: 10.40...10.50
2nd speed rpm : 1100
Rack travel in m: 9.70...9.90

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 10.40...10.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 85
Rack travel in m: 9.40...9.50
3rd pressure hPa : 160
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 190 (210)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1100
Del.quantity cm³/ : 178.0...182.0
1000 s: (175.0...185.0)

Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm³/ : 174.0...180.0
1000 s: (171.0...183.0)
Aneroid pressure h: 160
Speed rpm : 500
Del.quantity cm³/ : 157.0...169.0
1000 s: (154.0...172.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.70
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 225.0...245.0
1000 s: (221.0...249.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.70...4.90
Del.quantity cm³/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7760

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a39
 Edition : 25.08.89
 Replaces : 2.6.89
 Test oil : ISO-4113
 Combination no. : 0 402 036 079
 Injection pump
 Pump designation : PES6P120A720/3LS470-
 2
 EP type number : 0 412 026 050
 Governor
 Governor design. : RQV300...1100PA876
 Governor no. : 0 421 813 661

Customer spec. information
 Customer : MAN

Engine : D2866LF

1st version kW : 213.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.30...10.40

Del. quantity cm3/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del. quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.70...2.00

2nd speed rpm : 850

travel mm : 6.00...6.20

3rd speed rpm : 1100

travel mm : 8.10...8.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 183.0...185.0

1000 : (180.0...188.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 49...57

Testing:

1st rack travel in: 8.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1205...1235
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 16...24

Testing:

Speed rpm : 100
Minimum rack travel: 6.60
Speed rpm : 300
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 310...410

TORQUE CONTROL

Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 750
Rack travel in m: 10.30...10.40
2nd speed rpm : 1100
Rack travel in m: 9.80...9.90
3rd speed rpm : 925
Rack travel in m: 10.10...10.20
4th speed rpm : 975
Rack travel in m: 9.80...10.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 85
Rack travel in m: 9.40...9.50
3rd pressure hPa : 160

B12

Rack travel in m: 9.80...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1100
Del.quantity cm3/ : 178.0...182.0
1000 s: (175.0...185.0)
Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm3/ : 174.0...180.0
1000 s: (171.0...183.0)
Aneroid pressure h: 160
Speed rpm : 500
Del.quantity cm3/ : 157.0...169.0
1000 s: (154.0...172.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 8.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 225.0...245.0
1000 s: (221.0...249.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 j4
 Edition : 14.07.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 036 726
 Injection pump
 Pump designation : PES6P120A720/3LS3205
 EP type number : 0 412 026 729
 Governor
 Governor design. : RQ300/1100PA813-2
 Governor no. : 0 421 801 416

Customer-spec. information
 Customer : MAN

Engine : D2866LX

1st version kW : 265.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.1...4.3
 Del.quantity cm3/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del.quantity : 234.0...236.0
 1000 : (231.0...239.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80

Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.2

Testing:

Speed rpm : 100
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.10...4.30
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.80...12.90
2nd speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 110
Rack travel in m: 10.20...10.30
3rd pressure hPa : 470
Rack travel in m: 11.90...12.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1100
Del.quantity cm3/ : 226.0...232.0
1000 s: (223.0...235.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1145...1160

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7889

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 j
Edition : 11.05.89
Replaces : 28.11.88
Test oil : ISO-4113

Combination no. : 0 402 036 726

Injection pump
Pump designation : PES6P120A720LS3205
EP type number : 0 412 026 729
Governor
Governor design. : RQ300/1100PA813-2
Governor no. : 0 421 801 416

Customer-spec. information
Customer : MAN

Engine : D2866LX

1st version kW : 265.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.1...4.3
Del.quantity cm3/ : 1.7...2.3
100 s: (1.4...2.6)

Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80

Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.2

Testing:

Speed rpm : 100
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.10...4.30
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.80...12.90
2nd speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 110
Rack travel in m: 10.20...10.30
3rd pressure hPa : 470
Rack travel in m: 11.90...12.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1100
Del.quantity cm3/ : 226.0...232.0
1000 s: (223.0...235.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1145...1160

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7889

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 k3
 Edition : 15.08.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 036 727
 Injection pump
 Pump designation : PES6P120A720/3LS3205
 EP type number : 0 412 026 729
 Governor
 Governor design. : RQV300...1100PA876-1
 Governor no. : 0 421 813 670

Customer-spec. information
 Customer : MAN

Engine : D2866LX

1st version kW : 265.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.1...4.3
 Del.quantity cm3/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.10...1.30
 2nd speed rpm : 450
 travel mm : 3.10...3.50
 3rd speed rpm : 900
 travel mm : 6.00...6.40
 4th speed rpm : 1100
 travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1175
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del.quantity : 234.0...236.0
 1000 : (231.0...239.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 11.80
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1250...1280
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21

Testing:
Speed rpm : 100
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION
Speed rpm : 300...400

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.80...12.90
2nd speed rpm : 700
Rack travel in m: 13.00...13.10
3rd speed rpm : 1000
Rack travel in m: 12.90...13.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.00...13.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 110
Rack travel in m: 10.20...10.30
3rd pressure hPa : 470
Rack travel in m: 11.90...12.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1100
Del.quantity cm3/ : 226.0...232.0
1000 s: (223.0...235.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1140...1150

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MAN-NR. 7890

Note remarks

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 k4
 Edition : 15.08.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 036 728
 Injection pump
 Pump designation : PES6P120A720/3LS3205
 -1
 EP type number : 0 412 026 732
 Governor
 Governor design. : RQV300...1100PA876-2
 Governor no. : 0 421 813 712

Customer-spec. information
 Customer : MAN

Engine : D2866LXG

1st version kW : 265.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.80...12.90

Del. quantity cm³/ : 22.8...23.0

100 s: (22.5...23.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.1...4.3
 Del. quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.60...2.00
 2nd speed rpm : 450
 travel mm : 2.80...3.20
 3rd speed rpm : 800
 travel mm : 5.30...5.70
 4th speed rpm : 1100
 travel mm : 8.00...8.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1120
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200

Del.quantity : 228.0...230.0
1000 : (225.0...233.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 51...59

Testing:

1st rack travel in: 11.80
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21

Testing:

Speed rpm : 100
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 150
Rack travel in m: 10.10...10.20
3rd pressure hPa : 510
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

B22

Aneroid pressure h: 1200
Speed rpm : 1100
Del.quantity cm3/ : 226.0...232.0
1000 s: (223.0...235.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1140...1150

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7913

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 k1
Edition : 07.04.89
Replaces : 30.9.88
Test oil : ISO-4113

Combination no. : 0 402 036 728

Injection pump
Pump designation : PES6P120A720LS3205-1
EP type number : 0 412 026 732
Governor
Governor design. : RQV300...1100PA876-2
Governor no. : 0 421 813 712

Customer spec. information
Customer : MAN

Engine : D2866LXG

1st version kW : 265.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.80...12.90

Del. quantity cm³/ : 22.8...23.0

100 s: (22.5...23.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del. quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.60...2.00

2nd speed rpm : 450
travel mm : 2.80...3.20

3rd speed rpm : 800
travel mm : 5.30...5.70

4th speed rpm : 1100
travel mm : 8.00...8.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del. quantity : 228.0...230.0

1000 : (225.0...233.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 51...59

Testing:

1st rack travel in: 11.80
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21

Testing:

Speed rpm : 100
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 150
Rack travel in m: 10.10...10.20
3rd pressure hPa : 510
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1100

Del.quantity cm3/ : 226.0...232.0
1000 s: (223.0...235.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1140...1150

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7913

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 j2
 Edition : 14.07.89
 Replaces : 31.3.89
 Test oil : ISO-4113
 Combination no. : 0 402 036 729
 Injection pump
 Pump designation : PES6P12DA72OLS3205
 EP type number : 0 412 026 729
 Governor
 Governor design. : RQ300/1100PA813-7
 Governor no. : 0 421 801 474

Customer-spec. information
 Customer : MAN

Engine : D2866LUH

1st version kW : 273.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.3...4.5

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 236.0...238.0

1000 : (233.0...241.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 15.5

Testing:

1st rack travel in: 11.80

Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.4

Testing:

Speed rpm : 100
Minimum rack travel: 5.90
Speed rpm : 300
Rack travel in mm : 4.30...4.50
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.80...12.90
2nd speed rpm : 700
Rack travel in m: 14.00...14.20
3rd speed rpm : 885
Rack travel in m: 13.30...13.60
4th speed rpm : 935
Rack travel in m: 13.00...13.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.50
2nd pressure hPa : 190
Rack travel in m: 9.70...9.80
3rd pressure hPa : 520
Rack travel in m: 11.80...12.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

B26

Speed rpm : 1100
Del.quantity cm3/ : 226.0...232.0
1000 s: (223.0...235.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 120.0...122.0
1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1145...1160

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 230.0...250.0
1000 s: (226.0...254.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.30...4.50
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7946

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 n
Edition : 15.08.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 036 730
Injection pump
Pump designation : PES6P120A720/3LS3237
EP type number : 0 412 026 734
Governor
Governor design. : RQ300/1100PA813-9
Governor no. : 0 421 801 487

Customer-spec. information
Customer : MAN

Engine : D2866LX

1st version kW : 265.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80

Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.2

Testing:

Speed rpm : 100
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.10...4.30
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.80...12.90
2nd speed rpm : 700
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 110
Rack travel in m: 10.20...10.30
3rd pressure hPa : 470
Rack travel in m: 11.90...12.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1100
Del.quantity cm3/ : 226.0...232.0
1000 s: (223.0...235.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel Less than

full load rack tr: 11.80
Speed rpm : 1145...1160

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7890

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 k2
Edition : 03.11.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 036 731

Injection pump
Pump designation : PES6P12DA720/3LS3205
EP type number : 0 412 026 729
Governor
Governor design. : RQV300...950PA876-3
Governor no. : 0 421 813 807

Customer spec. information
Customer : MAN

Engine : D2866LXF/339

1st version kW : 250.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.00

Del. quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del. quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.40

2nd speed rpm : 800

travel mm : 5.00...5.40

3rd speed rpm : 1000

travel mm : 7.80...8.20

4th speed rpm : 1100

travel mm : 9.10...9.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del. quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 11.70
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21

Testing:
Speed rpm : 200
Minimum rack travel: 6.00
Speed rpm : 300
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION
Speed rpm : 300...400

TORQUE CONTROL
Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 12.70...12.80
2nd speed rpm : 700
Rack travel in m: 13.20...13.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.90...13.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...9.80
2nd pressure hPa : 150
Rack travel in m: 9.90...10.00
3rd pressure hPa : 510
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 228.0...232.0
1000 s: (225.0...235.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 990...1000

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MAN-NR. 2-7942

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 j3
 Edition : 09.11.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 036 732
 Injection pump
 Pump designation : PES6P120A720/3LS3205
 EP type number : 0 412 026 729
 Governor
 Governor design. : RQ300/950PA813-10
 Governor no. : 0 421 801 493

Customer spec. information
 Customer : MAN

Engine : D2866LXF/A39

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70

Speed rpm : 995...1010
2nd rack travel in: 4.00
Speed rpm : 1035...1065
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.2

Testing:

Speed rpm : 100
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.10...4.30
Rack travel in mm : 2.00
Speed rpm : 350...390

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 12.70...12.80
2nd speed rpm : 700
Rack travel in m: 13.20...13.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.90...13.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...9.80
2nd pressure hPa : 150
Rack travel in m: 9.90...10.00
3rd pressure hPa : 510
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 228.0...232.0
1000 s: (225.0...235.0)
Aneroid pressure h: -

CO4

Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 995...1010

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7962

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 10,6 b
Edition : 15.12.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 044 021
Injection pump
Pump designation : PES4P120A320RS451
EP type number : 0 412 024 020
Governor
Governor design. : RQV350...900PA934-2
Governor no. : 0 421 813 818

Customer-spec. information
Customer : BAUDOUIN

Engine : DNP4

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 7.6...7.8

Del.quantity cm3/ : 2.8...3.4

100 s: (-)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 0.80...1.20

2nd speed rpm : 500

travel mm : 3.00...3.40

3rd speed rpm : 750

travel mm : 5.80...6.20

4th speed rpm : 900

travel mm : 7.60...7.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 940

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 197.0...199.0

1000 : (194.0...202.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 11.60
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1000...1030
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 29...37

Testing:
Speed rpm : 100
Minimum rack trave: 9.20
Speed rpm : 350
Rack travel in mm : 7.60...7.80

CONSTANT REGULATION
Speed rpm : 350...440

START CUT-OUT

Speed 1/min : 300 (320)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 940...950

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 175.0...195.0
1000 s: (171.0...199.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 13,8 s2
Edition : 07.02.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 046 115

Injection pump
Pump designation : PES6P120A820LS249
EP type number : 0 412 026 024
Governor
Governor design. : RQV300...925PA204/4R
Governor no. : 0 421 813 159

Customer-spec. information
Customer : IVECO-FIAT

Engine : 8217.12.024

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 443 022

Opening
pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter
x Wall thickness
x Length mm : 8.00X2.00X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 925

Rack travel in mm : 10.50...10.60

Del. quantity cm³/ : 18.5...18.9

100 s: (18.2...19.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del. quantity cm³/ : 2.2...2.8

100 s: (1.9...3.1)

Spread cm³ : 0.6

100 s: (0.9)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.90...2.30

2nd speed rpm : 400

travel mm : 3.10...3.70

3rd speed rpm : 800

travel mm : 6.50...6.80

4th speed rpm : 925

travel mm : 7.80...8.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 925

Del. quantity : 185.0...189.0

1000 : (182.0...192.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 55...63

Testing:

1st rack travel in: 9.50
Speed rpm : 965...975
2nd rack travel in: 4.00
Speed rpm : 1040...1070
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 300...395

BREAKAWAY

1st version
1mm rack travel less than

full load rack travel: 9.50
Speed rpm : 965...975

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,4 a
Edition : 21.04.89
Replaces : 14.8.87
Test oil : ISO-4113

Combination no. : 0 402 046 148

Injection pump
Pump designation : PES6P100A820LS351
EP type number : 0 412 006 028
Governor
Governor design. : RQ300/1100PA327R
Governor no. : 0 421 801 062

Customer spec. information
Customer : DAIMLER-BENZ

Engine : OM 407

1st version kW : 176.5
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.5...7.7

Del.quantity cm3/ : 0.6...1.2

100 s: (0.3...1.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 500

Rack travel in mm : 14.30...15.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 122.0...124.0

1000 : (120.0...126.0)

Spread cm3 : 3.00

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 500

Rack travel in mm : 14.7

Testing:

1st rack travel in: 12.20

Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.6

Testing:
Speed rpm : 100
Minimum rack trave: 9.60
Speed rpm : 300
Rack travel in mm : 7.50...7.70
Rack travel in mm : 2.00
Speed rpm : 370...410

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (131.0...159.0)

Remarks:

:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,4 g
Edition : 21.04.89
Replaces : 11.85
Test oil : ISO-4113

Combination no. : 0 402 046 215

Injection pump
Pump designation : PES6P110A820LS422
EP type number : 0 412 016 057
Governor
Governor design. : RQ300/1100PA327-2
Governor no. : 0 421 801 136

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 407

1st version kW : 176.5
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del. quantity cm³/ : 13.0...13.2

100 s: (12.7...13.4)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.6...7.8

Del. quantity cm³/ : -
100 s: (-)

Spread cm³ : 0.4

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 130.0...132.0

1000 : (127.5...134.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.70

Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.7

Testing:

Speed rpm : 100
Minimum rack trave: 10.00
Speed rpm : 300
Rack travel in mm : 7.60...7.80
Rack travel in mm : 2.00
Speed rpm : 375...415

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 119.0...123.0
1000 s: (116.0...126.0)
Spread cm3 : 6.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.60...7.80
Spread cm3 : 4.00
1000 s: (-)

Remarks:

:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,4 h 3
 Edition : 21.04.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 218
 Injection pump
 Pump designation : PES6P110A820LS422
 EP type number : 0 412 016 057
 Governor
 Governor design. : RQ300/1100PA327-1
 Governor no. : 0 421 801 140

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 407

1st version kW : 147.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm³/ : 10.3...10.5

100 s: (10.0...10.8)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.2...8.4

Del.quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.2)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 103.0...105.0

1000 : (100.0...108.0)

Spread cm³ : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.60

Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.00
Speed rpm : 350...390

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 75.0...79.0
1000 s: (72.0...82.0)
Spread cm³ : 6.00
1000 s: (9.00)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 c
Edition : 10.02.89
Replaces : 12.9.86
Test oil : ISO-4113

Combination no. : 0 402 046 219

Injection pump
Pump designation : PES6P120A320RS426
EP type number : 0 412 026 039
Governor
Governor design. : RQV250...1100PA570
Governor no. : 0 421 813 295

Customer-spec. information
Customer : RVI

Engine : MIDS 063540

1st version kW : 195.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 3.9...4.1
Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.4)

Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.50...1.60
2nd speed rpm : 800
travel mm : 4.70...4.90
3rd speed rpm : 1100
travel mm : 6.80...7.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1270
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 650
Aneroid pressure h: 700
Del.quantity : 179.0...181.0
1000 : (176.0...184.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 57...65

Testing:

1st rack travel in: 8.00
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 5...13

Testing:

Speed rpm : 200
Minimum rack travel: 5.10
Speed rpm : 250
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

Speed rpm : 275...400

TORQUE CONTROL

Dimension a mm : 1.20
Torque control curve - 1st version
1st speed rpm : 650
Rack travel in m: 10.30...10.40
2nd speed rpm : 1100
Rack travel in m: 8.90...9.10
3rd speed rpm : 1020
Rack travel in m: 9.30...9.40
4th speed rpm : 890
Rack travel in m: 9.90...10.10

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.30...8.50
2nd pressure hPa : 290
Rack travel in m: 9.90...10.00
3rd pressure hPa : 245
Rack travel in m: 8.90...9.10

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 1100
Del.quantity cm³/ : 162.0...168.0
1000 s: (159.0...171.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.00
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...145.0
1000 s: (121.0...149.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.90...4.10
Del.quantity cm³/ : 15.0...21.0
1000 s: (12.0...24.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery mark 12, cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,4 L 1
Edition : 21.04.89
Replaces : 11.85
Test oil : ISO-4113

Combination no. : 0 402 046 228

Injection pump
Pump designation : PES6P110A820LS442
EP type number : 0 412 016 060
Governor
Governor design. : RQ300/1100PA327-2
Governor no. : 0 421 801 136

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : 407 H

1st version kW : 177.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
: (3.15...3.35)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + -., : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 12.8...13.0

100 s: (12.5...13.2)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0
Rack travel in mm : 7.7...7.9
Del.quantity cm3/ : 1.3...1.9
100 s: (1.0...2.1)
Spread cm3 : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 128.0...130.0

1000 : (125.5...132.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.30

Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.8

Testing:

Speed rpm : 100
Minimum rack travel: 9.40
Speed rpm : 300
Rack travel in mm : 7.70...7.90
Rack travel in mm : 2.00
Speed rpm : 365...405

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 110.0...114.0
1000 s: (107.0...117.0)
Spread cm3 : -
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,4 L20
Edition : 21.04.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 046 234
Injection pump
Pump designation : PES6P110A820LS442
EP type number : 0 412 016 060
Governor
Governor design. : RQ300/1100PA327-5
Governor no. : 0 421 801 163

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 407 STEHEND

1st version kW : 162.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
: (3.15...3.35)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 11.6...11.8

100 s: (11.3...12.0)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm³/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 116.0...118.0

1000 : (113.5...120.5)

Spread cm³ : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.00

Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 8.1

Testing:

Speed rpm : 100

Minimum rack trave: 9.50

Speed rpm : 300

Rack travel in mm : 8.00...8.20

Rack travel in mm : 2.00

Speed rpm : 375...415

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/ : 93.0...97.0

1000 s: (90.0...100.0)

Spread cm3 : 6.00

1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 130.0...150.0

1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 a 3
 Edition : 01.09.89
 Replaces : 11.85
 Test oil : ISO-4113
 Combination no. : 0 402 046 300
 Injection pump
 Pump designation : PES6P120A32ORS419
 EP type number : 0 412 026 037
 Governor
 Governor design. : RQV275...1100PA495-5
 Governor no. : 0 421 813 446

Customer spec. information
 Customer : RVI

Engine : MIDR 062045

1st version kW : 191.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.00...9.10

Del.quantity cm³/ : 16.2...16.4

100 s: (15.9...16.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 4.6...4.8
 Del.quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.20
 2nd speed rpm : 450
 travel mm : 3.40...3.80
 3rd speed rpm : 850
 travel mm : 6.10...6.30
 4th speed rpm : 1100
 travel mm : 8.00...8.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 700
 Del.quantity : 162.0...164.0
 1000 : (159.0...167.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:

1st rack travel in: 8.00
Speed rpm : 1170...1180
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 5...13

Testing:

Speed rpm : 200
Minimum rack travel: 6.30
Speed rpm : 275
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 285...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 9.00...9.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 7.80...8.00
2nd pressure hPa : 220
Rack travel in m: 8.60...8.70
3rd pressure hPa : 195
Rack travel in m: 8.10...8.30

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm³/ : 150.0...156.0
1000 s: (147.0...159.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 102.0...104.0
1000 s: (99.0...107.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 8.00
Speed rpm : 1170...1180

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...4.80
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery mark 10.5, cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 a 6
 Edition : 02.01.90
 Replaces : 16.12.88
 Test oil : ISO-4113

Combination no. : 0 402 046 313

Injection pump
 Pump designation : PES6P120A32ORS419
 EP type number : 0 412 026 037
 Governor
 Governor design. : RQV275...1050PA495-8
 Governor no. : 0 421 813 482

Customer-spec. information
 Customer : RVI

Engine : MIDS062045

1st version kW : 169.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.30...10.40

Del.quantity cm³/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 5.2...5.4
 Del.quantity cm³/ : 2.5...3.1
 100 s: (2.2...3.4)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.20
 2nd speed rpm : 450
 travel mm : 3.30...3.80
 3rd speed rpm : 800
 travel mm : 5.70...6.00
 4th speed rpm : 1050
 travel mm : 7.60...7.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 700
 Del.quantity : 161.0...163.0
 1000 : (158.0...166.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 116...124

Testing:

1st rack travel in: 9.30

Speed rpm : 1125...1135

2nd rack travel in: 4.00

Speed rpm : 1200...1230

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 60...64

Testing:

Speed rpm : 200

Minimum rack travel: 6.60

Speed rpm : 275

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 275...390

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.10...8.50

2nd pressure hPa : 360

Rack travel in m: 9.80...9.90

3rd pressure hPa : 160

Rack travel in m: 8.60...8.90

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm³/ : 153.0...159.0
1000 s: (150.0...162.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 109.0...111.0

1000 s: (106.0...114.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1125...1135

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 160.0...180.0

1000 s: (156.0...184.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.20...5.40

Del.quantity cm³/ : 25.0...31.0

1000 s: (22.0...34.0)

Spread cm³ : 8.00

1000 s: (12.00)

Remarks:

:

Start-of-delivery mark 9.5, cam angle
after start of delivery cyl. 1

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 d 6
Edition : 02.10.89
Replaces : 29.3.89
Test oil : ISO-4113

Combination no. : 0 402 046 329

Injection pump
Pump designation : PES6P120A320RS419-2
EP type number : 0 412 026 048
Governor
Governor design. : RQ275/950PA843
Governor no. : 0 421 801 378

Customer-spec. information
Customer : RVI

Engine : MIDS/PSO62045D/A

1st version kW : 129.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 8.00...8.10

Del.quantity cm3/ : 10.4...10.6

100 s: (10.1...10.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.20...4.40

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 525

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Del.quantity : 104.0...106.0

1000 : (101.0...109.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 525

Rack travel in mm : 20.0

Testing:

1st rack travel in: 6.50

Speed rpm : 1015...1030

2nd rack travel in: 4.00

Speed rpm : 1040...1070

4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 4.4

Testing:

Speed rpm : 200
Minimum rack trave: 5.20
Speed rpm : 275
Rack travel in mm : 3.50...3.70
Rack travel in mm : 2.00
Speed rpm : 300...340

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 500
Rack travel in m: 8.00...8.10
2nd speed rpm : 950
Rack travel in m: 7.40...7.50
3rd speed rpm : 775
Rack travel in m: 7.60...7.80

START CUT-OUT

Speed 1/min : 210 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950
Del.quantity cm³/ : 124.0...128.0
1000 s: (121.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 6.50
Speed rpm : 1015...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 3.50...3.70

Remarks:

Start-of-delivery mark 9.5, cam angle
after start of delivery cyl. 1

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 c
Edition : 06.04.88
Replaces : 26.2.88
Test oil : ISO-4113

Combination no. : 0 402 046 331

Injection pump
Pump designation : PES6P120A320RS514
EP type number : 0 412 026 052
Governor
Governor design. : RQV275...1000PA495-9
Governor no. : 0 421 813 672

Customer-spec. information
Customer : RVI

Engine : MIDR062045 K

1st version kW : 176.5
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 16.5...16.7

100 s: (16.2...17.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 1.40...1.60
2nd speed rpm : 500
travel mm : 3.80...4.30
3rd speed rpm : 800
travel mm : 5.70...6.10
4th speed rpm : 1000
travel mm : 7.10...7.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1120
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1000
Del.quantity : 165.0...167.0
1000 : (162.0...170.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 47...55

Testing:
1st rack travel in: 9.00
Speed rpm : 1075...1085
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 14...22

Testing:
Speed rpm : 200
Minimum rack travel: 7.20
Speed rpm : 275
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 285...400

TORQUE CONTROL
Dimension a mm : 1.50
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 11.50...11.60
2nd speed rpm : 1000
Rack travel in m: 9.90...10.00
3rd speed rpm : 730
Rack travel in m: 11.10...11.20
4th speed rpm : 850
Rack travel in m: 10.30...10.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.50...11.60

Measurement
Speed 1/min : 500
Rack travel in m: 9.10...9.30
2nd pressure hPa : 280
Rack travel in m: 11.10...11.20
3rd pressure hPa : 120
Rack travel in m: 9.80...10.00

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1000
Del.quantity cm3/ : 153.0...157.0
1000 s: (150.0...160.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 106.0...108.0
1000 s: (103.0...111.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1075...1085

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...165.0
1000 s: (135.0...165.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery mark 10.5, cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 a 8
Edition : 10.02.89
Replaces : 5.8.88
Test oil : ISO-4113

Combination no. : 0 402 046 332

Injection pump
Pump designation : PES6P120A320RS419
EP type number : 0 412 026 037
Governor
Governor design. : RQ275/1050PA844-1
Governor no. : 0 421 801 421

Customer-spec. information
Customer : RVI

Engine : MIPRO62045A

1st version kW : 210.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.10...10.20

Del.quantity cm³/ : 18.5...18.7

100 s: (18.2...19.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 4.6...4.8
Del.quantity cm³/ : 1.5...2.1

100 s: (1.2...2.4)

Spread cm³ : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 185.0...187.0

1000 : (182.0...190.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.10

Speed rpm : 1110...1125

2nd rack travel in: 4.00

Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack travel: 5.90
Speed rpm : 275
Rack travel in mm : 4.10...4.30
Rack travel in mm : 2.00
Speed rpm : 310...350

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.10...10.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.00...8.20
2nd pressure hPa : 360
Rack travel in m: 9.60...9.70
3rd pressure hPa : 160
Rack travel in m: 8.60...8.80

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 650
Del.quantity cm3/ : 168.0...174.0
1000 s: (165.0...177.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 105.0...107.0
1000 s: (102.0...110.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1110...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.10...4.30

Remarks:

Start-of-delivery mark 9.5, cam angle
after start of delivery cyl. 1

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 d
Edition : 10.02.89
Replaces : 30.9.88
Test oil : ISO-4113

Combination no. : 0 402 046 333

Injection pump
Pump designation : PES6P120A320RS514
EP type number : 0 412 026 052
Governor
Governor design. : RQV375...900PA885
Governor no. : 0 421 813 689

Customer-spec. information
Customer : RVI

Engine : MIDR062045

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 375.0

Rack travel in mm : 5.20...5.40

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.00...1.20

2nd speed rpm : 500
travel mm : 3.00...3.40

3rd speed rpm : 750
travel mm : 5.90...6.30

4th speed rpm : 900
travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 930

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 206.0...208.0

1000 : (203.0...211.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 11.70
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1015...1045
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 12...20

Testing:
Speed rpm : 200
Minimum rack trave: 6.80
Speed rpm : 375
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION
Speed rpm : 420...590

START CUT-OUT

Speed 1/min : 295 (315)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

APPLICATION

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 L
Edition : 15.08.89
Replaces : 7.4.89
Test oil : ISO-4113

Combination no. : 0 402 046 336

Injection pump
Pump designation : PES6P120A720RS517
EP type number : 0 412 026 054
Governor
Governor design. : RQ750PA895
Governor no. : 0 421 801 447

Customer-spec. information
Customer : MAN

Engine : D2866TUE

1st version kW : 190.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.80...11.90

Del.quantity cm³/ : 21.0...21.2

100 s: (20.7...21.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 400.0
Rack travel in mm : 4.4...4.6
Del.quantity cm³/ : 1.2...1.8
100 s: (0.9...2.1)
Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 375

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 210.0...212.0
1000 : (207.0...215.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Testing:
1st rack travel in: 10.80
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 788...801
4th rack travel in: 900
Speed rpm : 0.00...1.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:
: MAN-NR. 2-7849

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 g
Edition : 02.10.89
Replaces : 29.3.89
Test oil : ISO-4113

Combination no. : 0 402 046 337

Injection pump
Pump designation : PES6P120A320RS52C
EP type number : 0 412 026 056
Governor
Governor design. : RQV275...1050PA906
Governor no. : 0 421 813 724

Customer-spec. information
Customer : RVI

Engine : MIDRO62045D

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.30...10.40

Del.quantity cm³/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.2...5.4

Del.quantity cm³/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.20

2nd speed rpm : 450

travel mm : 3.30...3.80

3rd speed rpm : 800

travel mm : 5.70...6.00

4th speed rpm : 1050

travel mm : 7.60...7.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 188.0...190.0

1000 : (185.0...193.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:
1st rack travel in: 9.30
Speed rpm : 1125...1135
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 60...68

Testing:
Speed rpm : 200
Minimum rack travel: 6.60
Speed rpm : 275
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION
Speed rpm : 275...390

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.30...10.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.00...8.40
2nd pressure hPa : 360
Rack travel in m: 9.80...9.90
3rd pressure hPa : 160
Rack travel in m: 8.60...8.90

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm3/ : 171.0...177.0
1000 s: (168.0...180.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 109.0...111.0
1000 s: (106.0...114.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.30
Speed rpm : 1125...1135

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery mark 9.5 cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 i
Edition : 02.01.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 046 338
Injection pump
Pump designation : PES6P120A32ORS522
EP type number : 0 412 026 057
Governor
Governor design. : RQV275...1000PA912
Governor no. : 0 421 813 744

Customer-spec. information
Customer : RVI

Engine : MIDR062045L

1st version kW : 176.5
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 17.50...18.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.40...7.60
& maximum rack tra: 18.00
Difference, CS : 2.50...4.50

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 17.0...17.2

100 s: (16.7...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.5...5.7
Del.quantity cm3/ : 4.0...4.6
100 s: (3.7...4.9)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 0.70...0.90
2nd speed rpm : 500
travel mm : 3.50...4.10
3rd speed rpm : 750
travel mm : 5.30...5.70
4th speed rpm : 1000
travel mm : 7.10...7.30
5th speed rpm : 1400
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1130
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 170.0...172.0
1000 : (167.0...175.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 62...70

Testing:

1st rack travel in: 11.00
Speed rpm : 1075...1085
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 12...20

Testing:

Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 275
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

Speed rpm : 310...430

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 240
Rack travel in m: 11.60...11.70
3rd pressure hPa : 140
Rack travel in m: 10.60...10.90

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 152.0...158.0
1000 s: (149.0...161.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 97.0...99.0
1000 s: (94.0...102.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1075...1085

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...160.0
1000 s: (130.0...160.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 40.0...46.0
1000 s: (37.0...49.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 a 9
Edition : 15.08.89
Replaces : 14.4.89
Test oil : ISO-4113

Combination no. : 0 402 046 773

Injection pump
Pump designation : PES6P110A820LS3131
EP type number : 0 412 016 715
Governor
Governor design. : RQ300/1100PA800
Governor no. : 0 421 801 347

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM427H

1st version kW : 177.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
: (4.25...4.45)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 13.9...14.1

100 s: (13.6...14.3)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 300.0
Rack travel in mm : 7.2...7.4
Del.quantity cm³/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm³ : 0.4
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 12.50...13.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 139.0...141.0
1000 : (136.5...143.5)
Spread cm³ : 4.00
1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.0

Testing:

1st rack travel in: 10.00

Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:

Speed rpm : 100
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 380...420

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 116.0...119.0
1000 s: (113.0...122.0)
Spread cm3 : 6.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

Adjust full-load delivery by turning
temperature-dependent excess-fuel stop
for starting (TAS).

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN vorl.
Edition : 3.1.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 046 776
Injection pump
Pump designation : PES6P120A720LS3167
EP type number : 0 412 026 720
Governor
Governor design. : RQ750PA661-2

Customer-spec. information
Customer : MAN

Engine : D2866LE

1st version kW : 230.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
: (3.75...3.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.40...14.50

Del.quantity cm³/ : 28.0...28.1

100 s: (27.7...28.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.9...7.1
Del.quantity cm³/ : 2.4...3.0
100 s: (2.1...3.3)
Spread cm³ : 0.8
100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 280.0...281.0
1000 : (277.0...284.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Testing:
1st rack travel in: 13.40
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 788...791

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (210.0...250.0)

Remarks:

: MAN-NR. 2-7654
: (HANDEINGABE)

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 e
Edition : 25.08.89
Replaces : 5.2.88
Test oil : ISO-4113

Combination no. : 0 402 046 784

Injection pump
Pump designation : PES6P120A320RS3139
EP type number : 0 412 026 718
Governor
Governor design. : RQV275...1000PA728-2
Governor no. : 0 421 813 599

Customer-spec. information
Customer : RVI

Engine : MIDR 062045 E

1st version kW : 236.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 20.8...21.0

100 s: (20.5...21.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.8...6.0
Del.quantity cm3/ : 2.3...2.9

100 s: (2.0...3.2)

Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.90...1.10
2nd speed rpm : 450
travel mm : 3.30...3.70
3rd speed rpm : 800
travel mm : 5.60...6.00
4th speed rpm : 1000
travel mm : 7.00...7.20

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1170
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 208.0...210.0
1000 : (205.0...213.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 10.60
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16

Testing:
Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 275
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION
Speed rpm : 230...320

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.60...11.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.70...8.90
2nd pressure hPa : 320
Rack travel in m: 10.90...11.00
3rd pressure hPa : 160
Rack travel in m: 9.50...9.70

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm³/ : 200.0...206.0
1000 s: (197.0...209.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 95.0...99.0
1000 s: (92.0...102.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.60
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 23.0...29.0
1000 s: (20.0...32.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery mark 9, cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 b
Edition : 30.09.88
Replaces : 5.6.87
Test oil : ISO-4113

Combination no. : 0 402 046 785

Injection pump
Pump designation : PES6P110A320RS3190
EP type number : 0 412 016 720
Governor
Governor design. : RQV275...1175PA833-1
Governor no. : 0 421 813 607

Customer-spec. information
Customer : RVI

Engine : MIDR 060226

1st version kW : 154.5
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.50...5.00
& maximum rack tra: 18.0...21.0
Difference, CS : 4.00...6.00

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.40...13.50

Del.quantity cm³/ : 11.4...11.7

100 s: (11.1...11.9)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.00...4.20

Del.quantity cm³/ : 1.5...2.0

100 s: (1.2...2.2)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.90...1.10

2nd speed rpm : 450
travel mm : 3.40...3.80

3rd speed rpm : 800
travel mm : 5.10...5.50

4th speed rpm : 1175
travel mm : 7.20...7.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 1000
Del.quantity : 114.0...117.0
1000 : (111.5...119.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 49...57

Testing:

1st rack travel in: 12.40
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1400...1430
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19

Testing:

Speed rpm : 200
Minimum rack travel: 6.60
Speed rpm : 275
Rack travel in mm : 4.00...4.20

CONSTANT REGULATION

Speed rpm : 250...320

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 360
Rack travel in m: 12.60...12.70
3rd pressure hPa : 160
Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm³/ : 109.5...114.5
1000 s: (106.5...117.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 57.0...60.0
1000 s: (54.5...62.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (86.0...114.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.00...4.20
Del.quantity cm³/ : 15.0...20.0
1000 s: (12.5...22.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 c
Edition : 30.09.88
Replaces : 30.3.87
Test oil : ISO-4113

Combination no. : 0 402 046 786

Injection pump
Pump designation : PES6P110A320RS3191
EP type number : 0 412 016 721
Governor
Governor design. : RQV275...1250PA833-2
Governor no. : 0 421 813 608

Customer-spec. information
Customer : RVI

Engine : MIDR 060226

1st version kW : 175.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 13.80...13.90

Del.quantity cm³/ : 8.4...8.7

100 s: (8.1...8.9)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.8...5.0

Del.quantity cm³/ : 1.9...2.4

100 s: (1.6...2.6)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.80...1.20

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 800

travel mm : 4.60...5.00

4th speed rpm : 1250

travel mm : 7.50...7.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1360

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1000

Del.quantity : 84.0...87.0

1000 : (81.5...89.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 12.80
Speed rpm : 1315...1325
2nd rack travel in: 4.00
Speed rpm : 1455...1485
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 275
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION
Speed rpm : 280...320

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.80...13.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 13.10...13.20
2nd pressure hPa : 160
Rack travel in m: 13.50...13.60
3rd pressure hPa : 120
Rack travel in m: 13.20...13.40

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm³/ : 83.0...88.0
1000 s: (80.0...91.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 59.0...62.0
1000 s: (56.5...64.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.80
Speed rpm : 1315...1325

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (86.0...114.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.80...5.00
Del.quantity cm³/ : 19.0...24.0
1000 s: (16.5...26.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u
Edition : 15.08.89
Replaces : 18.10.88
Test oil : ISO-4113

Combination no. : 0 402 046 799

Injection pump
Pump designation : PES6P110A720RS3104
EP type number : 0 412 016 712
Governor
Governor design. : RQV300...1075PA850-1
Governor no. : 0 421 813 708

Customer-spec. information
Customer : KHD

Engine : BF6L413FR/513R

1st version kW : 193.0
Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 13.40...13.50

Del. quantity cm³/ : 14.5...14.7

100 s : (14.2...15.0)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del. quantity cm³/ : 1.6...2.1

100 s : (1.4...2.4)

Spread cm³ : 0.4

100 s : (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.20...1.40

2nd speed rpm : 400
travel mm : 2.70...3.30

3rd speed rpm : 600
travel mm : 4.20...4.80

4th speed rpm : 1120
travel mm : 8.40...8.60

5th speed rpm : 1245
travel mm : 9.60...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Aneroid pressure h: 900

Del. quantity : 145.0...147.0

1000 : (142.0...150.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 12.40

Speed rpm : 1115...1125

2nd rack travel in: 4.00

Speed rpm : 1240...1270

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 16...24

Testing:

Speed rpm : 100

Minimum rack travel: 9.60

Speed rpm : 300

Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

Speed rpm : 300...490

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1075

Rack travel in m: 13.40...13.50

2nd speed rpm : 600

Rack travel in m: 13.60...13.80

3rd speed rpm : 950

Rack travel in m: 13.50...13.60

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 450

Pressure hPa : 900

Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 450

1st pressure hPa : -

Rack travel in m: 12.60...12.80

2nd pressure hPa : 420

Rack travel in m: 13.20...13.30

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 600

Del.quantity cm³/ : 149.0...154.0

1000 s: (146.5...156.5)

Aneroid pressure h: -

Speed rpm : 450

Del.quantity cm³/ : 123.0...125.0

1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 170.0...200.0

1000 s: (166.0...204.0)

Remarks:

:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 a13
 Edition : 15.08.89
 Replaces : 4.11.88
 Test oil : ISO-4113

Combination no. : 0 402 046 803

Injection pump
 Pump designation : PES6P110A820LS3131-1
 EP type number : 0 412 016 717
 Governor
 Governor design. : RQ300/1100PA722-1
 Governor no. : 0 421 801 461

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM447

1st version kW : 168.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 13.7...13.9

100 s: (13.4...14.1)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 137.0...139.0

1000 : (134.5...141.5)

Spread cm³ : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.90

Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:

Speed rpm : 200
Minimum rack travel: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 370...410

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 113.0...116.0
1000 s: (110.0...119.0)
Spread cm3 : 5.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

Adjust full-load delivery by turning
temperature-dependent excess-fuel stop
for starting (TAS).

RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 13.00

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1315...1345

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 19...27

Testing:

Speed rpm : 100

Minimum rack travel: 9.00

Speed rpm : 300

Rack travel in mm : 7.40...7.60

CONSTANT REGULATION

Speed rpm : 300...550

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 14.00...14.10

2nd speed rpm : 750

Rack travel in m: 14.20...14.40

3rd speed rpm : 850

Rack travel in m: 14.10...14.30

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 900

Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 12.10...12.30

2nd pressure hPa : 510

Rack travel in m: 13.70...13.80

3rd pressure hPa : 375

Rack travel in m: 12.60...12.90

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 750

Del.quantity cm3/ : 170.0...174.0

1000 s: (168.0...176.0)

Aneroid pressure h: -

Speed rpm : 450

Del.quantity cm3/ : 123.0...125.0

1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 170.0...200.0

1000 s: (166.0...204.0)

Remarks:

:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 a15
 Edition : 02.01.90
 Replaces : 8.5.89
 Test oil : ISO-4113
 Combination no. : 0 402 046 808
 Injection pump
 Pump designation : PES6P110A820LS3131-1
 EP type number : 0 412 016 717
 Governor
 Governor design. : RQV300..1100PA916-1
 Governor no. : 0 421 813 749

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447

1st version kW : 177.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 13.8...14.0

100 s: (13.5...14.2)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0
 Rack travel in mm : 7.2...7.4
 Del.quantity cm3/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm3 : 0.4
 100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.40
 2nd speed rpm : 450
 travel mm : 3.40...3.80
 3rd speed rpm : 1150
 travel mm : 7.90...8.30
 4th speed rpm : 1225
 travel mm : 9.10...9.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1140
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Del.quantity : 138.0...140.0
 1000 : (135.5...142.5)

Spread cm³ : 4.00
 1000 : (8.00)

Remarks:

:

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:

1st rack travel in: 10.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 20...28

Testing:

Speed rpm : 200
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION

Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 116.0...119.0
 1000 s: (113.0...122.0)
Spread cm³ : 5.00
 1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
 1000 s: (126.0...154.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 m1
Edition : 15.08.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 046 810
Injection pump
Pump designation : PES6P120A720LS3229
EP type number : 0 412 026 733
Governor
Governor design. : RQ750PA661-4
Governor no. : 0 421 801 361

Customer-spec. information
Customer : MAN

Engine : D2866TE

1st version kW : 190.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
: (3.75...3.95)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 23.1...23.3

100 s: (22.8...23.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.5...4.9

Del.quantity cm³/ : 2.4...3.0

100 s: (2.1...3.3)

Spread cm³ : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 231.0...233.0

1000 : (228.0...236.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.20

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 782...795

3rd rack travel in: 4.00

4th rack travel in: 950

Speed rpm : 0.00...1.00

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 165.0...175.0
1000 s: (161.0...179.0)

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 f
Edition : 09.11.89
Replaces : 7.7.89
Test oil : ISO-4113

Combination no. : 0 402 046 811

Injection pump
Pump designation : PES6P11DA32ORS3233
EP type number : 0 412 016 728
Governor
Governor design. : RQV275...1175PA833-4
Governor no. : 0 421 813 762

Customer spec. information
Customer : RVI

Engine : MIDR 060226D

1st version kW : 166.0
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
 : (4.15...4.35)
Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.50...5.00
& maximum rack tra: 18.0...21.0
Difference, CS : 4.00...6.00

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.50...13.60

Del. quantity cm³/ : 11.7...12.0

100 s: (11.4...12.2)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.8...5.0

Del. quantity cm³/ : 2.8...3.3

100 s: (2.5...3.5)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.40...0.60

2nd speed rpm : 450

travel mm : 2.90...3.50

3rd speed rpm : 800

travel mm : 4.60...5.00

4th speed rpm : 1175

travel mm : 6.90...7.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 1000
Del.quantity : 117.0...120.0
1000 : (114.5...122.5)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:

1st rack travel in: 12.50
Speed rpm : 1255...1265
2nd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 14...22

Testing:

Speed rpm : 200
Minimum rack travel: 7.20
Speed rpm : 275
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 250...320

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 400
Rack travel in m: 12.90...13.00
3rd pressure hPa : 160
Rack travel in m: 10.90...11.30

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm3/ : 111.5...116.5
1000 s: (108.5...119.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 49.5...52.5
1000 s: (47.0...55.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1255...1265

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 85.0...105.0
1000 s: (81.0...109.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 28.0...33.0
1000 s: (25.5...35.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 g
Edition : 09.11.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 046 812

Injection pump
Pump designation : PES6P110A32ORS3236
EP type number : 0 412 016 730
Governor
Governor design. : RQV275...1175PA833-3
Governor no. : 0 421 813 656

Customer-spec. information
Customer : RVI

Engine : MIDR 0602260

1st version kW : 166.0
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.00
& maximum rack tra: 18.0...21.0
Difference, CS : 4.50...6.00

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.40...13.50

Del.quantity cm³/ : 11.7...12.0

100 s: (11.4...12.2)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 275.0
Rack travel in mm : 4.7...4.9
Del.quantity cm³/ : 2.8...3.3
100 s: (2.5...3.5)
Spread cm³ : 0.4
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 0.70...1.10
2nd speed rpm : 450
travel mm : 3.00...3.40
3rd speed rpm : 700
travel mm : 4.20...4.60
4th speed rpm : 1175
travel mm : 6.80...7.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1330
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1175

Aneroid pressure h: 1000
Del.quantity : 117.0...120.0
1000 : (114.5...122.5)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:

1st rack travel in: 12.40
Speed rpm : 1255...1265
2nd rack travel in: 4.00
Speed rpm : 1415...1435
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 14...22

Testing:

Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 275
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 250...320

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 400
Rack travel in m: 12.80...12.90
3rd pressure hPa : 160
Rack travel in m: 10.80...11.20

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm3/ : 111.5...116.5
1000 s: (108.5...119.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 49.5...52.5
1000 s: (47.0...55.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 1255...1265

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 85.0...105.0
1000 s: (81.0...109.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 28.0...33.0
1000 s: (25.5...35.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 m2
 Edition : 02.01.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 814
 Injection pump
 Pump designation : PES6P120A720LS3229
 EP type number : 0 412 026 733
 Governor
 Governor design. : RQ750PA945
 Governor no. : 0 421 801 512

Customer-spec. information
 Customer : MAN

Engine : D2866LE

1st version kW : 230.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
 : (3.75...3.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 28.1...28.3

100 s: (27.8...28.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.7

Del.quantity cm3/ : 2.4...3.0
 100 s: (2.1...3.3)

Spread cm3 : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 281.0...283.0

1000 : (278.0...286.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.50

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 787...800

4th rack travel in: 950

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 12.50...12.60

Remarks:

: MAN-NR. 2-7970

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 14,9 f3
 Edition : 09.11.89
 Replaces : 24.6.88
 Test oil : ISO-4113

Combination no. : 0 402 048 048

Injection pump
 Pump designation : PES8P120A320RS507
 EP type number : 0 412 028 023
 Governor
 Governor design. : RQV275...1050PA665-3
 Governor no. : 0 421 813 677

Customer-spec. information
 Customer : RVI

Engine : MIVR083530 G

1st version kW : 299.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 8- 4- 2- 7- 3-
 6- 5

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 19.6...19.8
 100 s: (19.3...20.1)

Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.2...6.4
 Del.quantity cm3/ : 2.0...2.6
 100 s: (1.7...2.9)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
 travel mm : 0.60...1.00
 2nd speed rpm : 450
 travel mm : 3.60...4.00
 3rd speed rpm : 700
 travel mm : 5.40...5.80
 4th speed rpm : 1050
 travel mm : 7.90...8.10
 5th speed rpm : 1400
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1085
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 700

Del.quantity : 196.0...198.0
1000 : (193.0...201.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:

1st rack travel in: 10.70
Speed rpm : 1105...1115
2nd rack travel in: 4.00
Speed rpm : 1205...1235
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 14...22

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

Speed rpm : 290...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...10.00
2nd pressure hPa : 170
Rack travel in m: 11.10...11.30
3rd pressure hPa : 130
Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

E10

Aneroid pressure h: 700
Speed rpm : 650
Del.quantity cm3/ : 180.0...186.0
1000 s: (177.0...189.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 121.0...123.0
1000 s: (118.0...126.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1105...1115

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.20...6.40
Del.quantity cm3/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery mark 12, cam angle
after start of delivery cyl. 1.

Note remarks

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

1st version
Speed rpm : 1050
Aneroid pressure h: 750

Del.quantity : 196.0...198.0
1000 : (193.0...201.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 53...61

Testing:

1st rack travel in: 10.70
Speed rpm : 1105...1115
2nd rack travel in: 4.00
Speed rpm : 1205...1235
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 17...25

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

Speed rpm : 290...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...10.00
2nd pressure hPa : 170
Rack travel in m: 11.10...11.30
3rd pressure hPa : 130
Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

E12

Aneroid pressure h: 750
Speed rpm : 650
Del.quantity cm³/ : 183.0...189.0
1000 s: (180.0...192.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 130.0...132.0
1000 s: (127.0...135.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1105...1115

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160.0...180.0
1000 s: (156.0...184.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 23.0...29.0
1000 s: (20.0...32.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery mark 11.5, cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 1
 Edition : 28.09.89
 Replaces : 7.4.89
 Test oil : ISO-4113
 Combination no. : 0 402 076 722
 Injection pump
 Pump designation : PES6P120A720RS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV400...1100P2A534
 Governor no. : 0 421 833 275

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6466 HF-050

1st version kW : 194.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X3.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 15.6...15.8

100 s: (15.4...16.1)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0
 Rack travel in mm : 4.8...5.0
 Del.quantity cm3/ : 1.7...2.2
 100 s: (1.5...2.5)

Spread cm3 : 0.6
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 156.5...158.5

1000 : (154.0...161.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.00
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1200...1210
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 750
Rack travel in m: 12.80...13.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.50

Measurement

Speed 1/min : 500

1st pressure hPa : 605
Rack travel in m: 11.00...11.10
2nd pressure hPa : 780
Rack travel in m: 12.10...12.50
3rd pressure hPa : 1200
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 174.5...179.5
1000 s: (172.0...182.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 117.5...121.5
1000 s: (114.5...124.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.80...5.00
Del.quantity cm³/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32035
Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y
Edition : 28.09.89
Replaces : 7.4.89
Test oil : ISO-4113
Combination no. : 0 402 076 723
Injection pump
Pump designation : PES6P120A720RS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV400...1100P2A534-
1
Governor no. : 0 421 833 276

Customer spec. information
Customer : JOHN DEERE

Engine : 6466 AF-050

1st version kW : 180.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X3.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.80...11.90

Del. quantity cm³/ : 15.0...15.2

100 s: (14.7...15.4)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 4.8...5.0
Del. quantity cm³/ : 1.7...2.2
100 s: (1.5...2.5)
Spread cm³ : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del. quantity : 150.0...152.0

1000 : (147.5...154.5)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.80
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1200...1210
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.80...11.90
2nd speed rpm : 700
Rack travel in m: 12.60...12.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.60...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.40...10.60
2nd pressure hPa : 720
Rack travel in m: 11.00...11.10
3rd pressure hPa : 895
Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm³/ : 173.5...178.5
1000 s: (171.0...181.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 120.0...124.0
1000 s: (117.0...127.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.80...5.00
Del.quantity cm³/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32033

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 b
 Edition : 28.09.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 076 727
 Injection pump
 Pump designation : PES6P120A72ORS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV400...1100P2A534-
 2
 Governor no. : 0 421 833 290

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076AF

1st version kW : 160.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 11.10...11.20
 Del.quantity cm3/ : 13.4...13.6
 100 s: (13.1...13.8)
 Spread cm3 : 0.4
 100 s: (0.6)

2nd speed rpm : 400.0
 Rack travel in mm : 4.8...5.0
 Del.quantity cm3/ : 1.7...2.2
 100 s: (1.5...2.5)
 Spread cm3 : 0.6
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 900
 Del.quantity : 134.0...136.0
 1000 : (131.5...138.5)
 Spread cm3 : 4.00
 1000 : (6.50)

RATED SPEED

1st version
 Control lever
 position degrees: 40...48

Testing:

1st rack travel in: 10.10
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1200...1210
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.4

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.10...11.20
2nd speed rpm : 700
Rack travel in m: 12.40...12.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 470
Rack travel in m: 11.20...11.30
2nd pressure hPa : 605
Rack travel in m: 11.80...12.20
3rd pressure hPa : 900
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 165.5...170.5
1000 s: (163.0...173.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm3/ : 122.0...126.0
1000 s: (119.0...129.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32034

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 c
Edition : 28.09.89
Replaces : 7.4.89
Test oil : ISO-4113

Combination no. : 0 402 076 728

Injection pump
Pump designation : PES6P120A720RS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV425...1050P2A489-
2
Governor no. : 0 421 833 291

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 HRW01

1st version kW : 175.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X3.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
(3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 16.0...16.2

100 s: (15.7...16.4)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 425.0
Rack travel in mm : 5.5...5.7
Del.quantity cm³/ : 3.1...3.6
100 s: (2.9...3.9)
Spread cm³ : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1200
Del.quantity : 160.0...162.0
1000 : (157.5...164.5)
Spread cm³ : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 40...48

Testing:

1st rack travel in: 11.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1170
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 610...670

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.20...12.30
2nd speed rpm : 600
Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.40...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.10...12.30
2nd pressure hPa : 725
Rack travel in m: 12.50...12.60
3rd pressure hPa : 815
Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 191.0...196.0
1000 s: (188.5...198.5)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm3/ : 157.0...161.0
1000 s: (154.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 31.5...36.5
1000 s: (29.0...39.0)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32888

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 10,1 g
Edition : 28.09.89
Replaces : 7.4.89
Test oil : ISO-4113

Combination no. : 0 402 076 730

Injection pump
Pump designation : PES6P110A720RS3217
EP type number : 0 412 016 724
Governor
Governor design. : RSV550...1050P2A534-
3
Governor no. : 0 421 833 304

Customer-spec. information
Customer : JOHN DEERE

Engine : 6619AT07

1st version kW : 201.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55
: (3.40...3.60)

Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 18.6...18.8

100 s: (18.3...19.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 550.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 3.1...3.6

100 s: (2.9...3.9)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del.quantity : 186.0...188.0

1000 : (183.5...190.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10.70

Speed rpm : 1095...1105

2nd rack travel in: 4.00
Speed rpm : 1165...1175
4th rack travel in: 1275
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 550
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 680...740

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.70...11.80
2nd speed rpm : 700
Rack travel in m: 12.50...12.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.50...12.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 425
Rack travel in m: 11.20...11.30
3rd pressure hPa : 675
Rack travel in m: 12.00...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 201.5...206.5
1000 s: (199.0...209.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 158.0...162.0
1000 s: (155.0...165.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 165.0...185.0
1000 s: (160.0...190.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 550
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 31.5...36.5
1000 s: (29.0...39.0)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

: JOHN DEERE # RE36078

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 10,1 g1
 Edition : 28.09.89
 Replaces : 7.4.89
 Test oil : ISO-4113

Combination no. : 0 402 076 731

Injection pump
 Pump designation : PES6P110A72ORS3217
 EP type number : 0 412 016 724
 Governor
 Governor design. : RSV400...1050P2A534-
 4
 Governor no. : 0 421 833 305

Customer spec. information
 Customer : JOHN DEERE

Engine : 6101 H

1st version kW : 224.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55
 : (3.40...3.60)

Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.90...13.00

Del.quantity cm³/ : 21.2...21.4
 100 s: (20.9...21.6)

Spread cm³ : 0.4
 100 s: (0.7)

2nd speed rpm : 400.0
 Rack travel in mm : 5.5...5.7
 Del.quantity cm³/ : 2.6...3.1
 100 s: (2.3...3.3)

Spread cm³ : 0.4
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 1200
 Del.quantity : 212.0...214.0
 1000 : (209.5...216.5)

Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
 Control lever
 position degrees: 36...44

Testing:
 1st rack travel in: 11.90
 Speed rpm : 1090...1100

2nd rack travel in: 4.00
Speed rpm : 1165...1175
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 14...22
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.90...13.00
2nd speed rpm : 700
Rack travel in m: 13.70...13.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.90...11.10
2nd pressure hPa : 325
Rack travel in m: 11.60...11.70
3rd pressure hPa : 640
Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/ : 228.0...233.0
1000 s: (225.5...235.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 160.0...164.0
1000 s: (157.0...167.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 165.0...185.0
1000 s: (160.0...190.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 26.0...31.0
1000 s: (23.5...33.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

: JOHN DEERE # RE36881

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 g
Edition : 28.09.89
Replaces : 7.4.89
Test oil : ISO-4113

Combination no. : 0 402 076 733

Injection pump
Pump designation : PES6P110A72ORS3224
EP type number : 0 412 016 726
Governor
Governor design. : RSV475...1050P2A534-
5
Governor no. : 0 421 833 313

Customer-spec. information
Customer : JOHN DEERE

Engine : 6101 AT 001

1st version kW : 170.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 3.35...3.45
: (3.30...3.50)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.20...13.30

Del.quantity cm³/ : 15.8...16.0

100 s: (15.6...16.2)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 475.0
Rack travel in mm : 6.0...6.2
Del.quantity cm³/ : 1.0...1.4
100 s: (0.8...1.7)
Spread cm³ : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 158.0...160.0

1000 : (156.0...162.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 12.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1135...1145
3rd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 15...23
Setting point w/out bumper spring
Speed rpm : 475
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 475
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.00
Speed rpm : 620...680

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.10...11.30
2nd pressure hPa : 335
Rack travel in m: 12.80...12.90
3rd pressure hPa : 185
Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 120.0...124.0
1000 s: (117.0...127.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...145.0
1000 s: (120.0...150.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 475
Rack travel in mm : 6.00...6.20
Del.quantity cm³/ : 10.5...14.5
1000 s: (8.0...17.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERD # RE39856

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5, cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MTU 47,5 d
Edition : 8.1.90
Replaces : 3.84
Test oil : ISO-4113

Combination no. : 0 402 430 006

Injection pump
Pump designation : PE12ZW160/12ORS1015/
11
EP type number : 0 412 460 001
Governor
Governor design. : RQUV300...900ZWA51R
Governor no. : 0 422 409 030

Customer-spec. information
Customer : MTU

Engine : MT 12 V 396

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 40...45

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 443 022

Opening
pressure, bar : 172...175

Test lines : 1 680 750 027

Outside diameter
x Wall thickness
x Length mm : 8.00X2.00X1500

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.50...2.60
: (2.45...2.65)
Rack travel in mm : 12.00
Firing order : 12-9-4-5-8-11-2-3-10
-7-6-1

Phasing : 0-15-60-75-120-135-
180-240-255-300-315
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 600
Rack travel in mm : 18.00
Del. quantity cm³/ : 51.3...52.3
100 s : (51.0...52.6)
Spread cm³ : 1.6
100 s : (2.4)

2nd speed rpm : 600
Rack travel in mm : 9.00
Del. quantity cm³/ : 14.0...16.0
100 s : (13.5...16.5)
Spread cm³ : 1.2
100 s : (1.8)
3rd speed rpm : 300
Rack travel in mm : 9.00
Del. quantity cm³/ : 7.2...9.2
100 s : (6.7...9.7)
Spread cm³ : 1.1
100 s : (1.6)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 900
Rack travel in mm : 18.00...18.10

RATED SPEED

1st version
Control lever
position degrees: 75...83

Testing:
1st rack travel in: 17.00
Speed rpm : 905...925
2nd rack travel in: 4.00
Speed rpm : 1000...1050
4th rack travel in: 1100
Speed rpm : 0.00...2.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 300
Rack travel in mm : 8.00

Control lever
position degrees: 18...24

LOW IDLE 1

Testing:

Speed rpm : 200
Minimum rack trave: 10.80
Speed rpm : 400
Rack travel in mm : 3.90...5.00
Rack travel in mm : -
Speed rpm : 485...590

LOW IDLE 2

Control lever
position degrees: 24...30
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 8.00

Testing:

Speed rpm : 200
Rack travel in mm : 14.3...17.2
Speed rpm : 300
Rack travel in mm : 10.3...11.8
Speed rpm : 500
Rack travel in mm : 2.5...3.7
Speed rpm : 720
Rack travel in mm : -

Remarks:

See VDT-W-400/002

Set idle stop at 300 min -1 to a
control-rod travel of 8.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BA0 31,8 c1
 Edition : 02.01.90
 Replaces : 6.85
 Test oil : ISO-4113
 Combination no. : 0 402 630 800
 Injection pump
 Pump designation : PE12P120A120RS7106
 EP type number : 0 412 620 800
 Governor
 Governor design. : RQV400...750PA731
 Governor no. : 0 421 813 464

Customer-spec. information
 Customer : BAUDOUIN

Engine : V12P15-2

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-
 11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.80...13.90

Del.quantity cm³/ : 41.9...42.1

100 s: (41.6...42.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 3.8...4.2

Del.quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 419.0...421.0

1000 : (416.0...424.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.80

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 776...789

4th rack travel in: 900

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 4...12

Testing:

Speed rpm : 100

Minimum rack travel: 6.10

Speed rpm : 400

Rack travel in mm : 4.50...4.70

START CUT-OUT

Speed 1/min : 340 (360)

Remarks: :



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 14,9 a
 Edition : 15.12.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 630 802
 Injection pump
 Pump designation : PE12P120A120RS7192
 EP type number : 0 412 620 818
 Governor
 Governor design. : RQV325...1500PA930
 Governor no. : 0 421 813 804

Customer-spec. information
 Customer : BAUDOUIN

Engine : 12 F 120 SR

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 5- 3- 8-
 11- 4- 2- 10- 7- 6

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 16.9...17.1

100 s: (16.6...17.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.4...4.6
 Del.quantity cm3/ : 1.5...2.1
 100 s: (1.2...2.4)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.60...1.00
 2nd speed rpm : 700
 travel mm : 2.90...3.30
 3rd speed rpm : 1500
 travel mm : 8.10...8.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1700
 Rack travel in mm : 4.50...7.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1500
 Aneroid pressure h: 900
 Del.quantity : 169.0...171.0
 1000 : (166.0...174.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 10.50
Speed rpm : 1540...1550
2nd rack travel in: 4.00
Speed rpm : 1630...1660
4th rack travel in: 1750
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 14...22

Testing:
Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION
Speed rpm : 320...460

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.50...11.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.10
2nd pressure hPa : 400
Rack travel in m: 11.00...11.10

START CUT-OUT

Speed 1/min : 270 (290)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1540...1550

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 31,8 c2
 Edition : 05.01.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 630 803
 Injection pump
 Pump designation : PE12P120A12ORS7106
 EP type number : 0 412 620 800
 Governor
 Governor design. : RQV400...750PA935
 Governor no. : 0 421 813 819

Customer spec. information
 Customer : BAUDOUIN

Engine : V12P15-2

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-
 11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.70...14.80

Del.quantity cm3/ : 41.9...42.1

100 s: (41.6...42.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0
 Rack travel in mm : 4.4...4.8
 Del.quantity cm3/ : 1.7...2.3
 100 s: (1.4...2.6)

Spread cm3 : 0.8
 100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 419.0...421.0
 1000 : (416.0...424.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Testing:
 1st rack travel in: 13.70
 Speed rpm : 750...755
 2nd rack travel in: 4.00
 Speed rpm : 781...794
 4th rack travel in: 900
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
 position degrees: 4...12

Testing:
 Speed rpm : 100

Minimum rack trave: 6.10
Speed rpm : 400
Rack travel in mm : 4.50...4.70

START CUT-OUT

Speed 1/min : 340 (360)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 31,8 e
 Edition : 12.01.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 630 804
 Injection pump
 Pump designation : PE12P120A12ORS7193
 EP type number : 0 412 620 820
 Governor
 Governor design. : RQV275...1000PA938
 Governor no. : 0 421 813 822

Customer-spec. information
 Customer : BAUDOUIN

Engine : V12P15-2

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-
 11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.50...13.60

Del. quantity cm³/ : 37.9...38.1

100 s: (37.6...38.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 5.3...5.7

Del. quantity cm³/ : 2.7...3.3

100 s: (2.4...3.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 0.60...1.00

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 700

travel mm : 5.00...5.40

4th speed rpm : 1000

travel mm : 7.60...7.80

5th speed rpm : 1300

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 379.0...381.0
1000 : (376.0...384.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.50
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 275
Rack travel in mm : 5.40...5.60

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 12.00...12.10

2nd pressure hPa : 400

Rack travel in m: 13.10...13.20

Rack travel in m: 12.40...12.60

START CUT-OUT

Speed 1/min : 195 (215)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 1040...1050

F08

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.30...5.70
Del.quantity cm3/ : 27.0...33.0
1000 s: (24.0...36.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 12,0 d1
Edition : 07.02.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 638 802
Injection pump
Pump designation : PE8P120A120LS7127
EP type number : 0 412 628 817
Governor
Governor design. : RQV250..1100PA785-1
Governor no. : 0 421 813 572

Customer-spec. information
Customer : STEYR

Engine : WD 815.66

1st version kW : 270.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 4- 8- 6- 3-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 11.50...11.60
Del. quantity cm³/ : 17.4...17.6
100 s : (17.1...17.9)
Spread cm³ : 0.5
100 s : (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 6.5...6.7
Del. quantity cm³/ : 1.5...2.1
100 s : (1.2...2.4)
Spread cm³ : 0.8
100 s : (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.10...1.20
2nd speed rpm : 340
travel mm : 1.70...2.10
3rd speed rpm : 410
travel mm : 2.30...2.70
4th speed rpm : 1150
travel mm : 8.40...8.60
5th speed rpm : 1240
travel mm : 9.60...9.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1140
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100

Aneroid pressure h: 900
Del.quantity : 174.0...176.0
1000 : (171.0...179.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 44...52

Testing:

1st rack travel in: 10.50
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 12...20

Testing:

Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 250
Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

Speed rpm : 250...420

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.50...11.60
2nd speed rpm : 700
Rack travel in m: 11.70...11.90
3rd speed rpm : 800
Rack travel in m: 11.60...11.80
4th speed rpm : 400
Rack travel in m: 12.00...12.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.00...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...9.60

2nd pressure hPa : 700
Rack travel in m: 11.20...11.30
3rd pressure hPa : 480
Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 182.0...190.0
1000 s: (180.0...192.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 112.0...116.0
1000 s: (110.0...118.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 230.0...260.0
1000 s: (226.0...264.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.50...6.70
Del.quantity cm3/ : 15.0...21.0
1000 s: (12.0...24.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 16,3 b
 Edition : 02.10.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 638 803
 Injection pump
 Pump designation : PE8P120A12ORS7141
 EP type number : 0 412 628 823
 Governor
 Governor design. : RQ750PA871
 Governor no. : 0 421 801 404

Customer spec. information
 Customer : PERKINS

Engine : CV8-320 G

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 6- 5- 4- 8-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.40...14.50

Del.quantity cm³/ : 33.3...33.5

100 s: (33.0...33.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 7.5...7.7

Del.quantity cm³/ : 3.6...4.2

100 s: (3.3...4.5)

Spread cm³ : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 333.0...335.0

1000 : (330.0...338.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
 position degrees: 77...85

Testing:

1st rack travel in: 13.40

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 775...785

4th rack travel in: 900

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 750...755

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 x 1
Edition : 06.10.89
Replaces : 12.12.86
Test oil : ISO-4113

Combination no. : 0 402 640 805

Injection pump
Pump designation : PE12P120A320LS7807
EP type number : 0 412 620 806
Governor
Governor design. : RQV350...1050PA842-1
Governor no. : 0 421 813 588

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 478.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 14.70...14.90

Del.quantity cm³/ : 21.7...21.9

100 s: (21.4...22.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.40...1.60

2nd speed rpm : 800
travel mm : 4.70...5.10

3rd speed rpm : 1100
travel mm : 7.60...8.20

4th speed rpm : 1175
travel mm : 9.20...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 650
Aneroid pressure h : 800
Del.quantity : 217.0...219.0
1000 : (214.0...222.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 14.00
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 100
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION
Speed rpm : 400...600

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 15.00...15.20
2nd speed rpm : 975
Rack travel in m: 15.30...15.50
3rd speed rpm : 900
Rack travel in m: 15.70...15.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 14.70...14.90

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.30...11.50

2nd pressure hPa : 600
Rack travel in m: 13.80...14.00
3rd pressure hPa : 950
Rack travel in m: 14.90...15.00
4th pressure hPa : 1150
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 10.50...10.70

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1300
Speed rpm : 1050
Del.quantity cm3/ : 226.0...229.0
1000 s: (223.0...232.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1300
Speed rpm : 850
Del.quantity cm3/ : 244.0...248.0
1000 s: (241.0...251.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1300
Speed rpm : 1050
Del.quantity cm3/ : 164.0...167.0 *
1000 s: (161.0...170.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack travel: 14.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.90
Del.quantity cm³/ : 16.0...22.0
1000 s: (13.0...25.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 a3
 Edition : 07.02.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 640 808
 Injection pump
 Pump designation : PE12P120A520LS7812
 EP type number : 0 412 620 807
 Governor
 Governor design. : RQV250...1150PA860
 Governor no. : 0 421 813 626

Customer-spec. information
 Customer : MAN

Engine : D2842LXE

1st version kW : 662.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00
 : (4.85...5.05)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-

Phasing : 345
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 24.5...24.7

100 s: (24.2...25.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 500.0

Rack travel in mm : 8.7...8.9

Del.quantity cm3/ : 14.1...14.7

100 s: (13.8...15.0)

Spread cm3 : 0.8

100 s: (1.2)

3rd speed rpm : 250

Rack travel in mm : 7.30...7.50

Del.quantity cm3/ : 5.2...6.0 *

100 s: (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 2.00...2.50

2nd speed rpm : 900
 travel mm : 6.70...6.90

3rd speed rpm : 1150
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 245.0...247.0
1000 : (242.0...250.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: ?

Testing:
1st rack travel in: 11.20
Speed rpm : 1190...1200
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: ?

Testing:
Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 12.20...12.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 270
Rack travel in m: 9.20...9.30
3rd pressure hPa : 790
Rack travel in m: 11.30...11.70

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 146.0...148.0
1000 s: (143.0...151.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0 *
1000 s: (-)

HIGH IDLE

1st version
Speed rpm : 500
Rack travel in mm : 7.20...7.40
Del.quantity cm³/ : 0 **
1000 s: (-)

2nd version
Speed rpm : 500
Rack travel in mm : 8.00...8.20
Del.quantity cm³/ : 10.0...130.0
1000 s: (-)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 52.0...60.0 *
1000 s: (-)

Remarks:

* applies to cylinders 4, 5, 6, 8, 10
and 12
** applies for cylinders 1, 2, 3, 7, 9
and 11

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 a
Edition : 15.08.89
Replaces : 10.2.89
Test oil : ISO-4113

Combination no. : 0 402 640 811

Injection pump
Pump designation : PE12P120A520LS7812
EP type number : 0 412 620 807
Governor
Governor design. : RQV250...1150PA860-1
Governor no. : 0 421 813 692

Customer-spec. information
Customer : MAN

Engine : D2842LYE

1st version kW : 735.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00
: (4.85...5.05)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-

Phasing : 345
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 28.9...29.1

100 s: (28.6...29.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 5.2...6.0 *
100 s: (-)

3rd speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm3/ : 0 **
100 s: (-)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 2.00...2.40
2nd speed rpm : 900
travel mm : 6.70...7.10
3rd speed rpm : 1150
travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 1300

Del.quantity : 289.0...291.0
1000 : (286.0...294.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 63...71

Testing:

1st rack travel in: 12.20
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1345...1375
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 8...16

Testing:

Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 405...465

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 270
Rack travel in m: 9.20...9.30
3rd pressure hPa : 790
Rack travel in m: 11.40...11.80

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

F19

Speed rpm : 500
Del.quantity cm3/ : 146.0...148.0
1000 s: (143.0...151.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm3/ : 0 **
1000 s: (-)

HIGH IDLE

1st version
Speed rpm : 500
Rack travel in mm : < 8.00
Del.quantity cm3/ : < 50.0
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : 8.60...8.80
Del.quantity cm3/ : 125.0

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 2-7858

* applies to cylinders 4, 5, 6, 8, 10
and 12
** applies for cylinders 1, 2, 3, 7, 9
and 11

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 a1
 Edition : 01.09.89
 Replaces : 7.2.89
 Test oil : ISO-4113
 Combination no. : 0 402 640 813
 Injection pump
 Pump designation : PE12P120A520LS7812
 EP type number : 0 412 620 807
 Governor
 Governor design. : RQV250...1150PA902-1
 Governor no. : 0 421 813 728

Customer-spec. information
 Customer : MAN

Engine : D2842LYE

1st version kw : 735.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness : 6.00X1.50X1000
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00
 : (4.85...5.05)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-

Phasing : 345
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.20...13.30

Del.quantity cm³/ : 28.9...29.1

100 s: (28.6...29.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 7.30...7.50

Del.quantity cm³/ : 5.2...6.0 *

100 s: (-)

3rd speed rpm : 500

Rack travel in mm : < 7.50

Del.quantity cm³/ : 0 **

100 s: (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.10...1.50

2nd speed rpm : 500
 travel mm : 3.80...4.20

3rd speed rpm : 850
 travel mm : 6.50...6.90

4th speed rpm : 1150
 travel mm : 9.50...9.70

5th speed rpm : 1400
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1600
Del.quantity : 289.0...291.0
1000 : (286.0...294.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 57...65

Testing:

1st rack travel in: 12.20
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1275...1315
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 18...26

Testing:

Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 430...490

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 500
Rack travel in m: 9.30...9.40
3rd pressure hPa : 1150
Rack travel in m: 11.80...12.20

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

F21

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm3/ : 0 **
1000 s: (-)
Rack travel in mm : 17.50

HIGH IDLE

1st version

Speed rpm : 500
Rack travel in mm : < 8.00
Del.quantity cm3/ : < 50.0 **
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : 8.60...8.80
Del.quantity cm3/ : 125.0
1000 s: (-)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 2-7960

* applies to cylinders 4, 5, 6, 8, 10
and 12
** applies for cylinders 1, 2, 3, 7, 9
and 11

APPLICATION

Ship



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 a2
 Edition : 01.09.89
 Replaces : 7.2.89
 Test oil : ISO-4113

Combination no. : 0 402 640 814

Injection pump
 Pump designation : PE12P120A520LS7812
 EP type number : 0 412 620 807
 Governor
 Governor design. : RQV250...1150PA902
 Governor no. : 0 421 813 720

Customer spec. information
 Customer : MAN

Engine : D2842LXE

1st version kW : 662.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00
 : (4.85...5.05)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 : 180-225-240-285-300-

Phasing : 345
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 24.9...25.1

100 s: (24.6...25.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 500.0

Rack travel in mm : 8.7...8.9

Del.quantity cm3/ : 14.1...14.7

100 s: (13.8...15.0)

Spread cm3 : 0.8

100 s: (1.2)

3rd speed rpm : 250

Rack travel in mm : 7.30...7.50

Del.quantity cm3/ : 5.2...6.0 *

100 s: (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.10...1.50

2nd speed rpm : 500
 travel mm : 3.80...4.20

3rd speed rpm : 850
 travel mm : 6.50...6.90

4th speed rpm : 1150
 travel mm : 9.50...9.70

5th speed rpm : 1400
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 249.0...251.0
1000 : (246.0...254.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 57...65

Testing:

1st rack travel in: 11.20
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1265...1295
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 18...26

Testing:

Speed rpm : 100
Minimum rack trave: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 430...490

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 270
Rack travel in m: 9.30...9.40
3rd pressure hPa : 790
Rack travel in m: 11.30...11.70

START CUT-OUT

Speed 1/min : 200 (220)

F24

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm³/ : 0 **
1000 s: (-)
Rack travel in mm : 17.50

HIGH IDLE

1st version

Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm³/ : 0 **
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : < 8.00
Del.quantity cm³/ : < 50.0 **
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.60...8.80
Del.quantity cm³/ : 125.0
1000 s: (-)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 7959

* applies to cylinders 4, 5, 6, 8 ,10
and 12
** applies for cylinders 1, 2, 3, 7, 9
and 11

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 b
 Edition : 02.01.90
 Replaces : 16.6.89
 Test oil : ISO-4113

Combination no. : 0 402 640 815

Injection pump
 Pump designation : PE12P120A520LS7824
 EP type number : 0 412 620 816
 Governor
 Governor design. : RQV250...1150PA902-2
 Governor no. : 0 421 813 760

Customer-spec. information
 Customer : MAN

Engine : D2842LYE

1st version kW : 735.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 : 180-225-240-285-300-
 Phasing : 345
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.60...13.70

Del.quantity cm³/ : 30.1...30.3

100 s: (29.8...30.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 500

Rack travel in mm : 9.10...9.30

Del.quantity cm³/ : 14.0...15.1

100 s: (14.6...15.4)

Spread cm³ : 0.8

100 s: (1.2)

3rd speed rpm : 250

Rack travel in mm : 7.20...7.40

Del.quantity cm³/ : 5.2...6.0 *

100 s: (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 3.10...3.70

3rd speed rpm : 750
 travel mm : 5.80...6.20

4th speed rpm : 1150
 travel mm : 9.50...9.70

5th speed rpm : 1400
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
 Aneroid pressure h: 1300
 Del.quantity : 301.0...303.0
 1000 : (298.0...306.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever
 position degrees: 58...66

Testing:

1st rack travel in: 12.60
 Speed rpm : 1190...1200
 2nd rack travel in: 4.00
 Speed rpm : 1290...1320
 4th rack travel in: 1400
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
 position degrees: 16...24

Testing:

Speed rpm : 100
 Minimum rack travel: 8.90
 Speed rpm : 250
 Rack travel in mm : 7.30...7.50
 Rack travel in mm : 2.00
 Speed rpm : 430...490

Aneroid/Altitude Compensator Test

1st version

Setting
 Speed rpm : 500
 Pressure hPa : 1300
 Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
 Rack travel in m: 9.10...9.30
 2nd pressure hPa : 100
 Rack travel in m: 9.50...9.60
 3rd pressure hPa : 470
 Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 170 (190)

F27

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm3/ : 149.0...151.0
 1000 s: (146.0...154.0)
 Spread cm3 : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60
 Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm3/ : 100.0...120.0 *
 1000 s: (-)

Speed rpm : 100
 Del.quantity cm3/ : 0 **
 1000 s: (-)
 Rack travel in mm : 17.50

HIGH IDLE

1st version

Speed rpm : 500
 Rack travel in mm : < 7.00
 Del.quantity cm3/ : 0 **
 1000 s: (-)

2nd version

Speed rpm : 500
 Rack travel in mm : < 7.50
 Del.quantity cm3/ : < 50.0
 1000 s: (-)

3rd version

Speed rpm : 500
 Rack travel in mm : 8.40...8.60
 Del.quantity cm3/ : 125.0
 1000 s: (-)

LOW IDLE

Speed rpm : 250
 Rack travel in mm : 7.20...7.40
 Del.quantity cm3/ : 52.0...60.0
 1000 s: (-)

Remarks:

: MAN-NR. 2-7960

* applies to cylinders 4, 5, 6, 8 ,10
and 12

** applies for cylinders 1, 2, 3, 7, 9
and 11

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 c
Edition : 01.09.89
Replaces : 7.7.89
Test oil : ISO-4113

Combination no. : 0 402 640 817

Injection pump
Pump designation : PE12P120A520LS7826
EP type number : 0 412 620 817
Governor
Governor design. : RQV350...1150PA870-4
Governor no. : 0 421 813 717

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 736.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 19.00...21.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 15.20...15.30

Del.quantity cm3/ : 31.0...31.2

100 s: (30.7...31.5)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 350.0
Rack travel in mm : 5.3...5.9
Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.90...2.40
2nd speed rpm : 500
travel mm : 3.00...3.50
3rd speed rpm : 800
travel mm : 4.30...4.80
4th speed rpm : 1200
travel mm : 8.30...8.80
5th speed rpm : 1250
travel mm : 9.30...9.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1275
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1800
Del.quantity : 310.0...312.0
1000 : (307.0...315.0)
Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version

Control lever
position degrees: 60...68

Testing:

1st rack travel in: 14.20
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 250
Minimum rack trave: 7.30
Speed rpm : 350
Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.00...8.30

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.40...9.50
2nd pressure hPa : 1100
Rack travel in m: 13.60...13.90

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

G02

1st version

Aneroid pressure h: 1800
Speed rpm : 750
Del.quantity cm³/ : 301.0...311.0
1000 s: (298.0...314.0)
Spread cm³ : 10.00
1000 s: (15.0)
Aneroid pressure h: 1800
Speed rpm : 1150
Del.quantity cm³/ : 240.0...243.0 *
1000 s: (237.0...246.0)
Spread cm³ : 10.00
1000 s: (15.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 120.0...122.0
1000 s: (117.0...125.0)
Spread cm³ : 10.00
1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 330.0...350.0
1000 s: (326.0...354.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 b
 Edition : 02.10.89
 Replaces : 31.3.89
 Test oil : ISO-4113
 Combination no. : 0 402 646 836
 Injection pump
 Pump designation : PE6P120A72ORS7126
 EP type number : 0 412 626 815
 Governor
 Governor design. : RQV200...1000PA725-1
 Governor no. : 0 421 813 552

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DSC11 18

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.10...14.20

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 4.5...4.9

Del.quantity cm3/ : 1.5...1.9

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

travel mm : 1.20...1.60

2nd speed rpm : 350

travel mm : 2.40...3.00

3rd speed rpm : 650

travel mm : 4.40...5.00

4th speed rpm : 1045

travel mm : 8.40...8.60

5th speed rpm : 1160

travel mm : 9.90...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:

1st rack travel in: 13.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 100
Minimum rack travel: 6.10
Speed rpm : 225
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00
Speed rpm : 340...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.10...14.20

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.50...10.90

2nd pressure hPa : 510

Rack travel in m: 13.00...13.10

3rd pressure hPa : 250

Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm³/ : 223.0...231.0
1000 s: (221.0...233.0)

Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 150.0...154.0
1000 s: (148.0...156.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 275.0...325.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1988-09-21

Start of delivery - engine: 13, before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 16,2 b1
 Edition : 02.10.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 857A
 Injection pump
 Pump designation : PE6P130A720RS7150
 EP type number : 0 412 636 808
 Governor
 Governor design. : RQV250...900PA881
 Governor no. : 0 421 813 676

Customer-spec. information
 Customer : PENTA

Engine : TAMD 162 A (PD)

1st version kW : 450.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 38.3...38.5

100 s: (37.9...38.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.7...3.9

Del. quantity cm³/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm³ : 0.5

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.90...1.30

2nd speed rpm : 350
 travel mm : 2.00...2.60

3rd speed rpm : 700
 travel mm : 3.90...4.50

4th speed rpm : 1075
 travel mm : 8.10...8.30

5th speed rpm : 1160
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 383.0...385.0
1000 : (379.0...389.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:

1st rack travel in: 11.60
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 6...14

Testing:

Speed rpm : 100
Minimum rack travel: 5.30
Speed rpm : 250
Rack travel in mm : 3.70...3.90

CONSTANT REGULATION

Speed rpm : 250...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.60...12.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.60...8.80
2nd pressure hPa : 340
Rack travel in m: 8.80...8.90
3rd pressure hPa : 970
Rack travel in m: 12.20...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 215.0...219.0
1000 s: (212.0...222.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1070...1080

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.70...3.90
Del.quantity cm3/ : 17.0...22.0
1000 s: (14.5...24.5)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,1 f
Edition : 24.11.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 646 884
Injection pump
Pump designation : PE6P130A320RS7113
EP type number : 0 412 636 803
Governor
Governor design. : RQ750PA926
Governor no. : 0 421 801 486

Customer spec. information
Customer : VOLVO-TRUCK

Engine : TID121 LG

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00

G07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 30.0...30.3

100 s: (29.7...30.6)

Spread cm3 : 0.5

100 s: (0.9)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 300.0...303.0

1000 : (297.0...306.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 19...27

Testing:

1st rack travel in: 11.90

Speed rpm : 748...753

2nd rack travel in: 4.00

Speed rpm : 777...792

4th rack travel in: 840

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

Speed rpm : 748...753

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 310.0...350.0
1000 s: (306.0...354.0)

HIGH IDLE

1st version

Speed rpm : 782
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

:

APPLICATION

Generator

Note remarks

Combination no. : 0 402 646 888

Customer-spec. information
Customer : DAIMLER-BENZ

1st version kW : 243.0
Rated speed : 2100

Test oil
inlet temp., C. : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

```
Prestroke mm      : 5.20...5.30
                   : (5.15...5.35)
Rack travel in mm  : 20.00...21.00
Firing order       : 6- 3- 5- 2- 4- 1
```

Phasing : 0-60-120-180-240-300
-360

Tolerance \pm \therefore 0.50 (0.75)

Time to cyl. no. : 6

1st speed rpm : 600

Rack travel in mm : 14.30...14.50

Del.quantity cm³/ : 22.4...22.6

100 s: (22.1...22.9)

Spread cm³ : 0.5

100 s: (0.9)

```

2nd speed      rpm : 350.0
Rack travel in mm : 5.1...5.7
Del.quantity   cm3/ : 1.6...2.2
               100 s: (1.3...2.5)
Spread         cm3 : 0.6
               100 s: (1.0)

```

(B) Setting of injection pump
with governor

1st speed	rpm	: 350
travel mm		: 1.40...1.60
2nd speed	rpm	: 800
travel mm		: 3.90...4.30
3rd speed	rpm	: 1100
travel mm		: 6.80...7.20
4th speed	rpm	: 1200
travel mm		: 8.50...9.00

Control-Lever position
Degree: -1

Speed rpm : 1185
 Rack travel in mm : 16.50...18.00

```
1st version
Speed      rpm   : 600
```

Aneroid pressure h: 1000
Del. quantity : 224.0...226.0
1000 : (221.0...229.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:

1st rack travel in: 14.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 200
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.10...5.70

CONSTANT REGULATION

Speed rpm : 350...600

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 15.10...15.30
3rd speed rpm : 1000
Rack travel in m: 15.30...15.50
4th speed rpm : 985
Rack travel in m: 15.50...15.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.30...14.50

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.40...10.60
2nd pressure hPa : 600
Rack travel in m: 13.00...13.20
3rd pressure hPa : 1250

G10

Rack travel in m: 14.50...14.70
4th pressure hPa : 1350
Rack travel in m: 14.90...15.10
5th pressure hPa : -
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del. quantity cm³/ : 245.0...249.0
1000 s: (242.0...252.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 750
Del. quantity cm³/ : 253.0...257.0
1000 s: (250.0...260.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 k
Edition : 03.11.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 646 893
Injection pump
Pump designation : PE6P120A320RS7194
EP type number : 0 412 626 834
Governor
Governor design. : RQ250/1000PA936
Governor no. : 0 421 801 507

Customer spec. information
Customer : DAF

Engine : WS 268

1st version kW : 268.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.70...12.80

Del. quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 7.0...7.4
Del. quantity cm³/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm³ : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 550
Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 1000
Del. quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 550
Rack travel in mm : 15.8

Testing:
1st rack travel in: 11.70
Speed rpm : 1035...1050
2nd rack travel in: 4.00

Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack trave: 7.70
Speed rpm : 250
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 335...375

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.70...12.80
2nd speed rpm : 1000
Rack travel in m: 12.60...12.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.80...11.00
2nd pressure hPa : 650
Rack travel in m: 12.60...12.70
3rd pressure hPa : 440
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 174.0...176.0
1000 s: (171.0...179.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.10...6.30

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 k1
Edition : 05.01.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 894

Injection pump
Pump designation : PE6P120A320RS7194
EP type number : 0 412 626 834
Governor
Governor design. : RQ250/1000PA936-1
Governor no. : 0 421 801 508

Customer spec. information
Customer : DAF

Engine : WS 295

1st version kW : 295.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 24.5...24.7

100 s: (24.2...25.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 7.0...7.4

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 245.0...247.0

1000 : (242.0...250.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.20

Speed rpm : 1035...1050

2nd rack travel in: 4.00

Speed rpm : 1125...1155
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack travel: 7.70
Speed rpm : 250
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 335...375

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 13.50...13.60
2nd speed rpm : 1000
Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 460
Rack travel in m: 12.50...12.60
3rd pressure hPa : 310
Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 171.0...173.0
1000 s: (168.0...176.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.10...6.30

Remarks:

:

Note remarks

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:

1st rack travel in: 11.70
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 100
Minimum rack travel: 7.70
Speed rpm : 250
Rack travel in mm : 6.10...6.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.80...11.00
2nd pressure hPa : 480
Rack travel in m: 12.20...12.30
3rd pressure hPa : 350
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm3/ : 174.0...176.0
1000 s: (171.0...179.0)

BREAKAWAY

1st version

G16

1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.10...6.30

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 j2
 Edition : 12.01.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 895
 Injection pump
 Pump designation : PE6P120A320RS7202
 EP type number : 0 412 626 835
 Governor
 Governor design. : RQV250...1000PA939
 Governor no. : 0 421 813 829

Customer-spec. information
 Customer : DAF

Engine : WS 268

1st version kW : 268.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.0...4.4

Del.quantity cm3/ : 2.3...2.9

100 s: (2.0...3.2)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.70...1.10

2nd speed rpm : 400
 travel mm : 2.40...3.20

3rd speed rpm : 800
 travel mm : 5.20...5.60

4th speed rpm : 1000
 travel mm : 7.30...7.50

5th speed rpm : 1300
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1060
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 1000

Del.quantity : 215.0...217.0
1000 : (212.0...220.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:
1st rack travel in: 10.40
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 8...16

Testing:
Speed rpm : 100
Minimum rack trave: 5.70
Speed rpm : 250
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION
Speed rpm : 270...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 11.40...11.50

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 8.70...8.90
2nd pressure hPa : 440
Rack travel in m: 10.70...10.80
3rd pressure hPa : 290
Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 148.0...150.0
1000 s: (145.0...153.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.00...4.40
Del.quantity cm3/ : 23.0...29.0
1000 s: (20.0...32.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 j1
 Edition : 15.12.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 895
 Injection pump
 Pump designation : PE6P120A320RS7202
 EP type number : 0 412 626 835
 Governor
 Governor design. : RQV275...1000PA939
 Governor no. : 0 421 813 829

Customer-spec. information
 Customer : DAF

Engine : WS 268

1st version kW : 268.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.0...4.4

Del.quantity cm3/ : 2.3...2.9

100 s: (2.0...3.2)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 1.10...1.50

2nd speed rpm : 400

travel mm : 2.40...3.20

3rd speed rpm : 800

travel mm : 5.20...5.60

4th speed rpm : 1000

travel mm : 7.30...7.50

5th speed rpm : 1300

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1060

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 215.0...217.0

1000 : (212.0...220.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:

1st rack travel in: 10.40
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 100
Minimum rack travel: 5.70
Speed rpm : 250
Rack travel in mm : 4.10...4.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 11.40...11.50

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 8.70...8.90
2nd pressure hPa : 440
Rack travel in m: 10.70...10.80
3rd pressure hPa : 290
Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 148.0...150.0
1000 s: (145.0...153.0)

BREAKAWAY

1st version

G20

1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.00...4.40
Del.quantity cm³/ : 23.0...29.0
1000 s: (20.0...32.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Note remarks

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

Time to cyl. no. : 6

100 s: (0.9)

Rack travel in mm : 19.20...20.80

1000 : (9.00)

1st version

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.60
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.8

Testing:

Speed rpm : 200
Minimum rack trave: 7.70
Speed rpm : 300
Rack travel in mm : 5.70...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.30
2nd speed rpm : 950
Rack travel in m: 14.60...14.80
3rd speed rpm : 700
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.50...13.70

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.60...10.80
2nd pressure hPa : 550
Rack travel in m: 12.70...12.90
3rd pressure hPa : 1150
Rack travel in m: 13.80...14.00
4th pressure hPa : 1250
Rack travel in m: 14.30...14.50
5th pressure hPa : -
Rack travel in m: 8.90...9.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1350
Speed rpm : 950
Del.quantity cm3/ : 238.0...240.0
1000 s: (235.0...243.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1350
Speed rpm : 800
Del.quantity cm3/ : 236.0...239.0
1000 s: (233.0...242.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 138.0...140.0
1000 s: (135.0...143.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.60
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 205.0...225.0
1000 s: (201.0...229.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,2 b
Edition : 24.11.89
Replaces : 1.9.88
Test oil : ISO-4113

Combination no. : 0 402 648 804

Injection pump
Pump designation : PE8P120A920/4LS7003
EP type number : 0 412 628 801
Governor
Governor design. : RQ900PA528
Governor no. : 0 421 801 127

Customer spec. information
Customer : SAAB-SCANIA

Engine : DS 14 41, DSI 14 42

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-
6- 8

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 18.6...18.8
100 s: (18.3...19.1)

Spread cm3 : 0.6
100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Del.quantity : 186.0...188.0
1000 : (183.0...191.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600
Rack travel in mm : 16.5

Testing:
1st rack travel in: 11.80
Speed rpm : 900...905
2nd rack travel in: 4.00
Speed rpm : 941...955
4th rack travel in: 1000
Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 900...955

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 240.0...290.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version

Rack travel in mm : 4.90...5.10

Spread cm³ : 4.00

1000 s: (7.00)

Remarks:

:

ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1986-06-04

Start of delivery - engine:

DS 14 - 18, before TDC

DSI 14 - 17, before TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a 4
Edition : 03.11.89
Replaces : 28.11.88
Test oil : ISO-4113

Combination no. : 0 402 648 817

Injection pump
Pump designation : PE8P120A320LS7801
EP type number : 0 412 628 806
Governor
Governor design. : RQ300/1050PA762-5
Governor no. : 0 421 801 399

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 650

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.00...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75
2nd speed rpm : 1050
Rack travel in m: 12.80...13.00
3rd speed rpm : 850
Rack travel in m: 13.70...14.00
4th speed rpm : 700
Rack travel in m: 14.40...14.60

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.40...12.60
2nd pressure hPa : 400
Rack travel in m: 13.40...13.70
3rd pressure hPa : 850
Rack travel in m: 14.20...14.30 *
4th pressure hPa : -
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050
Speed rpm : 1050
Del.quantity cm3/ : 180.0...183.0
1000 s: (177.0...186.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1050
Speed rpm : 700
Del.quantity cm3/ : 215.0...219.0
1000 s: (212.0...222.0)
Spread cm3 : 8.00
1000 s: (12.00)
Aneroid pressure h: 1050
Speed rpm : 850
Del.quantity cm3/ : 206.0...210.0
1000 s: (203.0...213.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a 5
Edition : 03.11.89
Replaces : 29.3.89
Test oil : ISO-4113

Combination no. : 0 402 648 825

Injection pump
Pump designation : PE8P120A320LS7801
EP type number : 0 412 628 806
Governor
Governor design. : RQV300..1050PA797-3
Governor no. : 0 421 813 627

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kw : 260.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del. quantity cm3/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.0...6.4
Del. quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.20...1.40
2nd speed rpm : 600
travel mm : 4.90...5.10
3rd speed rpm : 1075
travel mm : 7.40...7.60
4th speed rpm : 1100
travel mm : 8.00...8.20
5th speed rpm : 1150
travel mm : 9.00...9.20

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1125
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 500
Aneroid pressure h: 650
Del.quantity : 201.0...203.0
1000 : (198.0...206.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...62

Testing:
1st rack travel in: 11.80
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 15...23

Testing:
Speed rpm : 200
Minimum rack trave: 7.70
Speed rpm : 300
Rack travel in mm : 6.00...6.40

CONSTANT REGULATION
Speed rpm : 300...450

TORQUE CONTROL
Dimension a mm : 1.40
2nd speed rpm : 1050
Rack travel in m: 12.70...12.90
3rd speed rpm : 850
Rack travel in m: 13.70...14.00
4th speed rpm : 700
Rack travel in m: 14.30...14.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 14.10...14.30

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.40...12.60

G28

2nd pressure hPa : 400
Rack travel in m: 13.40...13.70
3rd pressure hPa : 850
Rack travel in m: 14.20...14.30 *
4th pressure hPa : -
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1050
Speed rpm : 1050
Del.quantity cm3/ : 180.0...183.0
1000 s: (177.0...186.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1050
Speed rpm : 700
Del.quantity cm3/ : 215.0...219.0
1000 s: (212.0...222.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1050
Speed rpm : 850
Del.quantity cm3/ : 206.0...210.0
1000 s: (203.0...213.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

:

* Increase in control-rod travel with

respect to setting at least 0.1 mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 e
Edition : 15.08.89
Replaces : 2.11.87
Test oil : ISO-4113

Combination no. : 0 402 648 831

Injection pump
Pump designation : PE8P120A320LS7801-1
EP type number : 0 412 628 818
Governor
Governor design. : RQV350..1050PA842-3
Governor no. : 0 421 813 622

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 320.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del. quantity cm³/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.7...5.9
Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.90...2.10

2nd speed rpm : 700
travel mm : 4.00...4.40

3rd speed rpm : 1100
travel mm : 6.80...7.20

4th speed rpm : 1200
travel mm : 8.30...8.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1185

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 750
Del.quantity : 212.0...214.0
1000 : (209.0...217.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:
1st rack travel in: 14.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack trave: 7.40
Speed rpm : 350
Rack travel in mm : 5.50...6.10

CONSTANT REGULATION
Speed rpm : 350...550

TORQUE CONTROL
Dimension a mm : 0.20
2nd speed rpm : 1050
Rack travel in m: 15.20...15.40
3rd speed rpm : 975
Rack travel in m: 15.40...15.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 750
Rack travel mm : 14.50...14.70

Measurement
Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 12.20...12.40
2nd pressure hPa : 550
Rack travel in m: 13.60...13.80
3rd pressure hPa : 900
Rack travel in m: 14.70...14.80

H03

4th pressure hPa : 1250
Rack travel in m: 15.20...15.40
5th pressure hPa : -
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1250
Speed rpm : 1050
Del.quantity cm3/ : 227.0...230.0
1000 s: (224.0...233.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1250
Speed rpm : 900
Del.quantity cm3/ : 238.0...242.0
1000 s: (235.0...245.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1250
Speed rpm : 1050
Del.quantity cm3/ : 156.0...159.0 *
1000 s: (153.0...162.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 150.0...152.0
1000 s: (147.0...155.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a10
Edition : 01.09.89
Replaces : 11.3.88
Test oil : ISO-4113

Combination no. : 0 402 648 833

Injection pump
Pump designation : PE8P120A32OLS7801-1
EP type number : 0 412 628 818
Governor
Governor design. : RQV350..1050PA866-3
Governor no. : 0 421 813 703

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.6...6.0
Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.20...1.40
2nd speed rpm : 600
travel mm : 4.90...5.10
3rd speed rpm : 1100
travel mm : 8.00...8.50
4th speed rpm : 1170
travel mm : 9.20...9.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1090
Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Aneroid pressure h: 1100
Del.quantity : 181.0...183.0
1000 : (178.0...186.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 11.80
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 250
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

Dimension a mm : 1.60
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.80...12.90
2nd speed rpm : 750
Rack travel in m: 14.40...14.60
3rd speed rpm : 950
Rack travel in m: 13.50...13.60
4th speed rpm : 830
Rack travel in m: 14.30...14.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : -
Rack travel mm : 11.20...11.50

Measurement
Speed 1/min : 600

1st pressure hPa : 420

H05

Rack travel in m: 11.90...12.10
2nd pressure hPa : 600
Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 270 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 700
Del.quantity cm3/ : 213.0...217.0
1000 s: (210.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1100
Speed rpm : 1050
Del.quantity cm3/ : 152.0...154.0 *
1000 s: (149.0...157.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...200.0
1000 s: (176.0...204.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a 8
Edition : 07.07.89
Replaces : 21.8.87
Test oil : ISO-4113

Combination no. : 0 402 648 841

Injection pump
Pump designation : PE8P120A320LS7801-1
EP type number : 0 412 628 818
Governor
Governor design. : RQ300/1050PA762-5
Governor no. : 0 421 801 399

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.10...14.30

Del.quantity cm3/ : 20.3...20.5

100 s: (20.0...20.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 650

Del.quantity : 203.0...205.0

1000 : (200.0...208.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75
2nd speed rpm : 1050
Rack travel in m: 12.80...13.00
3rd speed rpm : 850
Rack travel in m: 13.70...14.00
4th speed rpm : 700
Rack travel in m: 14.40...14.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.40...12.60
2nd pressure hPa : 400
Rack travel in m: 13.40...13.70
3rd pressure hPa : 850
Rack travel in m: 14.20...14.30 *
4th pressure hPa : -
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050
Speed rpm : 1050
Del.quantity cm3/ : 180.0...183.0
1000 s: (177.0...186.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1050
Speed rpm : 700
Del.quantity cm3/ : 215.0...219.0
1000 s: (212.0...222.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1050
Speed rpm : 850
Del.quantity cm3/ : 206.0...210.0
1000 s: (203.0...213.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 j
Edition : 02.10.89
Replaces : 7.2.89
Test oil : ISO-4113

Combination no. : 0 402 648 844

Injection pump
Pump designation : PE8P120A320LS7816
EP type number : 0 412 628 829
Governor
Governor design. : RQ300/1050PA717-2
Governor no. : 0 421 801 439

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 353.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 234.0...237.0

1000 : (231.0...240.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 5.90...6.50
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40
2nd speed rpm : 1050
Rack travel in m: 14.40...14.60
3rd speed rpm : 850
Rack travel in m: 15.00...15.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.10...11.30
2nd pressure hPa : 650
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1050
Rack travel in m: 13.70...13.90 *
4th pressure hPa : 1350
Rack travel in m: 14.50...14.70
5th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 252.0...256.0
1000 s: (249.0...259.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 850
Del.quantity cm3/ : 270.0...274.0
1000 s: (267.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 k
Edition : 06.10.89
Replaces : 16.6.88
Test oil : ISO-4113

Combination no. : 0 402 648 845

Injection pump
Pump designation : PE8P120A320LS7816
EP type number : 0 412 628 829
Governor
Governor design. : RQV300..1050PA797-5
Governor no. : 0 421 813 702

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 353.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.4...23.7
100 s: (23.1...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.5
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.20...1.40
2nd speed rpm : 800
travel mm : 5.80...6.10
3rd speed rpm : 1120
travel mm : 8.20...8.80
4th speed rpm : 1180
travel mm : 9.60...10.40

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1100
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 234.0...237.0
1000 : (231.0...240.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 53...61

Testing:

1st rack travel in: 13.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 18...26

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.90...6.50

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : 1.30
2nd speed rpm : 1050
Rack travel in m: 14.40...14.60
3rd speed rpm : 800
Rack travel in m: 14.90...15.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.10...11.30
2nd pressure hPa : 650
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1050
Rack travel in m: 13.70...13.90 *

4th pressure hPa : 1350
Rack travel in m: 14.50...14.70
5th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm³/ : 252.0...256.0
1000 s: (249.0...259.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm³/ : 270.0...274.0
1000 s: (267.0...277.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 14,5 d
Edition : 07.04.89
Replaces : 4.11.88
Test oil : ISO-4113

Combination no. : 0 402 648 850

Injection pump
Pump designation : PE8P120A520LS7818
EP type number : 0 412 628 830
Governor
Governor design. : RQV250...1150PA860
Governor no. : 0 421 813 626

Customer-spec. information
Customer : MAN

Engine : D2848LXE 40

1st version kW : 500.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70
: (4.55...4.75)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 28.9...29.1

100 s: (28.6...29.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 500.0
Rack travel in mm : 8.9...9.1
Del.quantity cm3/ : 14.9...15.1
100 s: (28.6...29.4)

3rd speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 5.2...6.0 *
100 s: (-)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.00...1.20

2nd speed rpm : 450
travel mm : 3.50...4.10

3rd speed rpm : 850
travel mm : 6.50...6.90

4th speed rpm : 1150
travel mm : 8.40...8.60

5th speed rpm : 1450
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1150
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 1600
Del.quantity : 289.0...291.0
1000 : (286.0...294.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 12.50
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1360...1390
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16

Testing:
Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 425...485

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1600
Rack travel mm : 13.50...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 250
Rack travel in m: 9.30...9.40
3rd pressure hPa : 900
Rack travel in m: 11.90...12.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0 *
1000 s: (-)

HIGH IDLE

1st version
Speed rpm : 500
Rack travel in mm : < 7.00
Del.quantity cm³/ : 0 **
1000 s: (-)

2nd version
Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm³/ : < 50.0 **
1000 s: (-)

3rd version
Speed rpm : 500
Rack travel in mm : 8.20...8.40
Del.quantity cm³/ : 125.0 **

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 52.0...60.0
1000 s: (-)

Remarks:
: MAN-NR. 7927

* applies to cylinders 2, 3, 4 and 8
** applies for cylinders 1, 5, 6, and 7

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 14,5 e
Edition : 02.01.90
Replaces : 7.4.89
Test oil : ISO-4113

Combination no. : 0 402 648 851

Injection pump
Pump designation : PE8P120A520LS7818
EP type number : 0 412 628 830
Governor
Governor design. : RQV250...1150PA902
Governor no. : 0 421 813 720

Customer-spec. information
Customer : MAN

Engine : D2848LXE 40

1st version kW : 500.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.10...14.20

Del.quantity cm3/ : 30.7...30.9

100 s: (30.4...31.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 500.0
Rack travel in mm : 8.90...9.10
Del.quantity cm3/ : 14.9...15.1
100 s: (14.6...15.4)

3rd speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 5.2...6.0 *
100 s: (-)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.40...1.60

2nd speed rpm : 450
travel mm : 3.40...4.00

3rd speed rpm : 850
travel mm : 6.30...6.90

4th speed rpm : 1150
travel mm : 9.40...9.60

5th speed rpm : 1450
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1210

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 307.0...309.0
1000 : (304.0...312.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 57...65

Testing:

1st rack travel in: 13.10
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 19...27

Testing:

Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 430...490

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 14.10...14.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 100
Rack travel in m: 9.30...9.40
3rd pressure hPa : 470
Rack travel in m: 11.90...12.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.10
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 500
Rack travel in mm : < 7.00
Del.quantity cm3/ : 0 **
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm3/ : < 50.0 **
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.30...8.50
Del.quantity cm3/ : 125.0 **

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 52.0...60.0
1000 s: (-)

Remarks:

: MAN-NR. 7944

* applies to cylinders 2, 3, 4 and 8

** applies for cylinders 1, 5, 6, and 7

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 17,2 e
Edition : 13.12.89
Replaces : 30.5.89
Test oil : ISO-4113

Combination no. : 0 402 648 854

Injection pump
Pump designation : PE8P130A920/5LS7822
EP type number : 0 412 638 802
Governor
Governor design. : RQV300...950PA905
Governor no. : 0 421 813 723

Customer-spec. information
Customer : IVECO-FIAT

Engine : 8280.42.001

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 40...45

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 688 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
: (5.05...5.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 4- 3- 6- 5-
7- 2

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 23.5...23.8

100 s: (23.1...24.1)

Spread cm3 : -

100 s: (1.2)

2nd speed rpm : 300.0
Rack travel in mm : 6.1...6.5
Del.quantity cm3/ : 2.0...2.6
100 s: (1.6...3.0)

Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
travel mm : 0.60...1.10

2nd speed rpm : 350
travel mm : 2.10...2.50

3rd speed rpm : 600
travel mm : 3.80...4.40

4th speed rpm : 950
travel mm : 7.20...7.40

5th speed rpm : 1200
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 900

Del.quantity : 235.0...238.0
1000 : (231.5...241.5)
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 55...61

Testing:
1st rack travel in: 10.60
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 9...17

Testing:
Speed rpm : 200
Minimum rack trave: 7.70
Speed rpm : 300
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION
Speed rpm : 380...480

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.60...11.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 440
Rack travel in m: 11.10...11.20
3rd pressure hPa : 400
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 950
Del.quantity cm3/ : 215.0...222.0
1000 s: (211.5...225.5)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 173.0...176.0
1000 s: (169.5...179.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.60
Speed rpm : 990...1000

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...240.0
1000 s: (206.0...244.0)

Remarks:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 o
Edition : 13.12.89
Replaces : 29.3.89
Test oil : ISO-4113

Combination no. : 0 402 648 855

Injection pump
Pump designation : PE8P120A320LS7823
EP type number : 0 412 628 835
Governor
Governor design. : RQV350..1050PA870-5
Governor no. : 0 421 813 735

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.40...1.60

2nd speed rpm : 800
travel mm : 4.70...5.10

3rd speed rpm : 1100
travel mm : 7.60...8.20

4th speed rpm : 1175
travel mm : 9.20...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 234.0...237.0
1000 : (231.0...240.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:

1st rack travel in: 13.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 250
Minimum rack travel: 7.10
Speed rpm : 350
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 14.40...14.60
3rd speed rpm : 800
Rack travel in m: 15.30...15.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.10...11.30
2nd pressure hPa : 650
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1050
Rack travel in m: 13.70...13.90 *

4th pressure hPa : 1250
Rack travel in m: 14.50...14.70
5th pressure hPa : -
Rack travel in m: 9.70...10.00

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm³/ : 252.0...256.0
1000 s: (249.0...259.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm³/ : 270.0...274.0
1000 s: (267.0...277.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm³/ : 184.0...187.0
1000 s: (181.0...190.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 141.0...143.0
1000 s: (138.0...146.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 p
Edition : 23.06.89
Replaces : 29.3.89
Test oil : ISO-4113

Combination no. : 0 402 648 858

Injection pump
Pump designation : PE8P120A320LS7816-10
EP type number : 0 412 628 836
Governor
Governor design. : RQ300/1050PA717-2
Governor no. : 0 421 801 439

Customer-spec. information
Customer : DB-LKW

Engine : OM442 LA

1st version kW : 353.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm³/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 234.0...237.0

1000 : (231.0...240.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 5.90...6.50
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40
2nd speed rpm : 1050
Rack travel in m: 14.40...14.60
3rd speed rpm : 800
Rack travel in m: 14.90...15.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.10...11.30
2nd pressure hPa : 650
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1050
Rack travel in m: 13.70...13.90
4th pressure hPa : 1500
Rack travel in m: 14.80...15.00
5th pressure hPa : -
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 252.0...256.0
1000 s: (249.0...259.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 263.0...267.0
1000 s: (260.0...270.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a11
Edition : 24.05.89
Replaces : 14.4.89
Test oil : ISO-4113

Combination no. : 0 402 648 859

Injection pump
Pump designation : PE8P120A320LS7801-1
EP type number : 0 412 628 818
Governor
Governor design. : RQV350..950PA866-4
Governor no. : 0 421 813 737

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 264.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 930

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...6.1

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.40...1.60

2nd speed rpm : 425
travel mm : 2.40...2.60

3rd speed rpm : 800
travel mm : 5.30...5.60

4th speed rpm : 1000
travel mm : 7.80...8.20

5th speed rpm : 1100
travel mm : 9.40...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1020

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 930
Aneroid pressure h: 950
Del.quantity : 206.0...208.0
1000 : (203.0...211.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 51...59

Testing:

1st rack travel in: 13.00
Speed rpm : 980...990
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 18...26

Testing:

Speed rpm : 250
Minimum rack travel: 8.20
Speed rpm : 350
Rack travel in mm : 5.60...6.10

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

Dimension a mm : 1.30
Torque control curve - 1st version
1st speed rpm : 930
Rack travel in m: 14.00...14.10
2nd speed rpm : 750
Rack travel in m: 15.30...15.50
3rd speed rpm : 900
Rack travel in m: 14.20...14.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : -
Rack travel mm : 11.00...11.40

Measurement

Speed 1/min : 600

1st pressure hPa : 450

Rack travel in m: 11.80...12.00
2nd pressure hPa : 700
Rack travel in m: 13.90...14.10

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 950
Speed rpm : 750
Del.quantity cm3/ : 229.0...233.0
1000 s: (226.0...236.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 950
Speed rpm : 930
Del.quantity cm3/ : 167.0...169.0 *
1000 s: (164.0...172.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 q
Edition : 05.01.90
Replaces : 11.5.89
Test oil : ISO-4113

Combination no. : 0 402 648 864

Injection pump
Pump designation : PE8P120A320LS7816
EP type number : 0 412 628 829
Governor
Governor design. : RQ300/950PA762-7
Governor no. : 0 421 801 480

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600
Rack travel in mm : 14.60...14.80
Del.quantity cm3/ : 25.4...25.6
 100 s: (25.1...25.9)
Spread cm3 : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.5
Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)
Spread cm3 : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 254.0...256.0
 1000 : (251.0...259.0)
Spread cm3 : 6.00
 1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.20
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1150
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 5.90...6.50
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.90
2nd speed rpm : 950
Rack travel in m: 15.20...15.40
3rd speed rpm : 890
Rack travel in m: 15.50...15.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 12.20...12.40
2nd pressure hPa : 700
Rack travel in m: 13.80...14.00
3rd pressure hPa : 1200
Rack travel in m: 14.80...15.00
4th pressure hPa : 1500
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 950
Del.quantity cm3/ : 270.0...273.0
1000 s: (267.0...276.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 270.0...274.0
1000 s: (267.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a14
 Edition : 20.10.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 865
 Injection pump
 Pump designation : PE8P120A320LS7801-4
 EP type number : 0 412 628 839
 Governor
 Governor design. : RQV350...1050PA866-5
 Governor no. : 0 421 813 767

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...6.0

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.40

2nd speed rpm : 600
 travel mm : 4.90...5.10

3rd speed rpm : 1100
 travel mm : 8.00...8.50

4th speed rpm : 1170
 travel mm : 9.20...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Aneroid pressure h: 1100
Del.quantity : 181.0...183.0
1000 : (178.0...186.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:

1st rack travel in: 11.80
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 250
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

Dimension a mm : 1.60
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.80...12.90
2nd speed rpm : 700
Rack travel in m: 14.40...14.60
3rd speed rpm : 950
Rack travel in m: 13.50...13.60
4th speed rpm : 830
Rack travel in m: 14.30...14.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : -
Rack travel mm : 10.90...11.20

Measurement

Speed 1/min : 600

1st pressure hPa : 420

H28

Rack travel in m: 12.60...12.80
2nd pressure hPa : 600
Rack travel in m: 13.20...13.40

START CUT-OUT

Speed 1/min : 270 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 700
Del.quantity cm³/ : 213.0...217.0
1000 s: (210.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1100
Speed rpm : 1050
Del.quantity cm³/ : 152.0...154.0 *
1000 s: (149.0...157.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a15
Edition : 13.10.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 870

Injection pump
Pump designation : PE8P120A320LS7801-1
EP type number : 0 412 628 818
Governor
Governor design. : RQV350..1050PA866-6
Governor no. : 0 421 813 810

Customer-spec. information
Customer : MB-TRW

Engine : OM442 A

1st version kW : 260.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.80...12.90

Del. quantity cm³/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...6.0

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.40...1.60

2nd speed rpm : 800

travel mm : 4.80...5.10

3rd speed rpm : 1100

travel mm : 7.70...8.10

4th speed rpm : 1175

travel mm : 9.00...9.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Aneroid pressure h: 1100
Del.quantity : 181.0...183.0
1000 : (178.0...186.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:

1st rack travel in: 11.80
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 350
Rack travel in mm : 5.40...6.00

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

Dimension a mm : 1.60
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.80...12.90
2nd speed rpm : 700
Rack travel in m: 14.40...14.60
3rd speed rpm : 950
Rack travel in m: 13.50...13.60
4th speed rpm : 830
Rack travel in m: 14.30...14.50

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : -
Rack travel mm : 11.10...11.40

Measurement

Speed 1/min : 600

1st pressure hPa : 420

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Rack travel in m: 11.80...12.00
2nd pressure hPa : 600
Rack travel in m: 13.40...13.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 700
Del.quantity cm³/ : 213.0...217.0
1000 s: (210.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1100
Speed rpm : 1050
Del.quantity cm³/ : 152.0...154.0 *
1000 s: (149.0...157.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a16
Edition : 15.12.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 878

Injection pump
Pump designation : PE8P120A320LS7801
EP type number : 0 412 628 806
Governor
Governor design. : RQ300/950PA762-9
Governor no. : 0 421 801 510

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 269.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 800

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.90

Speed rpm : 990...1000

2nd rack travel in: 4.00

Speed rpm : 1060...1090

4th rack travel in: 1200

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.2

Testing:

Speed rpm : 200

Minimum rack travel: 8.00

Speed rpm : 300

Rack travel in mm : 6.00...6.40

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75

2nd speed rpm : 950

Rack travel in m: 12.90...13.10

3rd speed rpm : 800

Rack travel in m: 14.20...14.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 800

Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600

1st pressure hPa : 350

Rack travel in m: 11.80...12.00

2nd pressure hPa : 500

Rack travel in m: 13.30...13.60

3rd pressure hPa : 950

Rack travel in m: 14.10...14.20 *

4th pressure hPa : -

Rack travel in m: 10.60...11.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

J04

Aneroid pressure h: 1150

Speed rpm : 950

Del.quantity cm3/ : 190.0...193.0

1000 s: (187.0...196.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1150

Speed rpm : 750

Del.quantity cm3/ : 216.0...219.0

1000 s: (213.0...222.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 138.0...140.0

1000 s: (135.0...143.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 175.0...190.0

1000 s: (171.0...194.0)

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a17
Edition : 01.12.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 879

Injection pump
Pump designation : PE8P120A320LS7801-4
EP type number : 0 412 628 839
Governor
Governor design. : RQV350..1050PA842-5
Governor no. : 0 421 813 836

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.90...2.10

2nd speed rpm : 700
travel mm : 4.00...4.40

3rd speed rpm : 1100
travel mm : 6.80...7.20

4th speed rpm : 1200
travel mm : 8.30...8.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1185

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 750
Del.quantity : 212.0...214.0
1000 : (209.0...217.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 58...66

Testing:

1st rack travel in: 14.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control Lever
position degrees: 10...18

Testing:

Speed rpm : 100
Minimum rack trave: 7.40
Speed rpm : 350
Rack travel in mm : 5.50...6.10

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

Dimension a mm : 0.20
2nd speed rpm : 1050
Rack travel in m: 15.20...15.40
3rd speed rpm : 975
Rack travel in m: 15.40...15.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 750
Rack travel mm : 14.50...14.70

Measurement

Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 12.20...12.40
2nd pressure hPa : 550
Rack travel in m: 13.60...13.80
3rd pressure hPa : 900
Rack travel in m: 14.70...14.80

4th pressure hPa : 1250
Rack travel in m: 15.50...15.70
5th pressure hPa : -
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1250
Speed rpm : 1050
Del.quantity cm3/ : 227.0...230.0
1000 s: (224.0...233.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 1250
Speed rpm : 900
Del.quantity cm3/ : 238.0...242.0
1000 s: (235.0...245.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 1250
Speed rpm : 1050
Del.quantity cm3/ : 156.0...159.0 *
1000 s: (153.0...162.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 150.0...152.0
1000 s: (147.0...155.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 14.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 18,2 d
Edition : 07.04.89
Replaces : 1.7.88
Test oil : ISO-4113

Combination no. : 0 402 649 802

Injection pump
Pump designation : PE10P120A520LS7811
EP type number : 0 412 629 802
Governor
Governor design. : RQV250...1150PA860
Governor no. : 0 421 813 626

Customer-spec. information
Customer : MAN

Engine : D 2840 LXE

1st version kW : 603.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00
: (4.85...5.05)
Rack travel in mm : 9.00...12.00
Firing order : 10- 9- 4- 1- 8- 7
: - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
216-261-288-333
Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 28.4...28.6

100 s: (28.1...28.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 500.0
Rack travel in mm : 8.7...8.9
Del.quantity cm3/ : 14.1...14.7
100 s: (13.8...15.0)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.00...1.40
2nd speed rpm : 750
travel mm : 5.90...6.50
3rd speed rpm : 1150
travel mm : 8.40...8.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 284.0...286.0
1000 : (281.0...289.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 12.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1345...1375
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16

Testing:
Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 410...470

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 13.30...13.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 270
Rack travel in m: 9.20...9.30
3rd pressure hPa : 790
Rack travel in m: 11.30...11.70

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 146.0...148.0
1000 s: (143.0...151.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0**
1000 s: (-)

HIGH IDLE

1st version
Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm³/ : 0 *
1000 s: (-)

2nd version
Speed rpm : 500
Rack travel in mm : < 8.00
Del.quantity cm³/ : < 50.0 *
1000 s: (-)

3rd version
Speed rpm : 500
Rack travel in mm : 8.60...8.80
Del.quantity cm³/ : 125.0 *
1000 s: (-)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 52.0...60.0
1000 s: (-)

Remarks:

* applies to cylinders 1, 2, 3, 7 and 9
** applies for cylinders 4, 5, 6, 8 and 10

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 18,2 e
Edition : 07.04.89
Replaces : 30.9.88
Test oil : ISO-4113
Combination no. : 0 402 649 806
Injection pump
Pump designation : PE10P120A520LS7819
EP type number : 0 412 629 804
Governor
Governor design. : RQV300...1050PA896
Governor no. : 0 421 813 715

Customer-spec. information
Customer : MAN

Engine : D 2840 LF

1st version kW : 405.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00
: (4.85...5.05)
Rack travel in mm : 9.00...12.00
Firing order : 10- 9- 4- 1- 8- 7
- 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
216-261-288-333
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.0...5.2
Del.quantity cm3/ : 1.2...1.8
100 s: (0.9...2.1)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.40
2nd speed rpm : 500
travel mm : 3.10...3.70
3rd speed rpm : 800
travel mm : 5.50...5.90
4th speed rpm : 1050
travel mm : 7.60...7.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1125
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 750
Aneroid pressure h: 1000

Del.quantity : 233.0...235.0
1000 : (230.0...238.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:

1st rack travel in: 10.00
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 12...20

Testing:

Speed rpm : 100
Minimum rack travel: 6.60
Speed rpm : 300
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 320...435

TORQUE CONTROL

Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.10...11.20
2nd speed rpm : 750
Rack travel in m: 11.40...11.50
3rd speed rpm : 900
Rack travel in m: 11.30...11.40

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.40...11.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.40
2nd pressure hPa : 400
Rack travel in m: 9.60...9.70
3rd pressure hPa : 600

Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 220.0...224.0
1000 s: (217.0...227.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 156.0...158.0
1000 s: (153.0...161.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7932

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 18,2 d1
Edition : 24.11.89
Replaces : 7.2.89
Test oil : ISO-4113

Combination no. : 0 402 649 807

Injection pump
Pump designation : PE10P120A520LS7811
EP type number : 0 412 629 802
Governor
Governor design. : RQV250...1150PA902
Governor no. : 0 421 813 720

Customer-spec. information
Customer : MAN

Engine : D 2840 LX

1st version kW : 603.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.90...5.00
: (4.85...5.05)
Rack travel in mm : 9.00...12.00
Firing order : 10- 9- 4- 1- 8- 7
: - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
216-261-288-333
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 13.70...13.80
Del.quantity cm3/ : 29.6...29.8
100 s: (29.3...30.1)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 500
Rack travel in mm : 9.2...9.4
Del.quantity cm3/ : 14.9...15.1
100 s: (14.6...15.4)
Spread cm3 : 0.8
100 s: (1.2)
3rd speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 5.2...6.0
100 s: (-)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.10...1.50
2nd speed rpm : 500
travel mm : 3.80...4.20
3rd speed rpm : 850
travel mm : 6.50...6.90
4th speed rpm : 1150
travel mm : 9.50...9.70
5th speed rpm : 1400
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1200
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
 Aneroid pressure h: 1600
 Del.quantity : 296.0...298.0
 1000 : (293.0...301.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever
 position degrees: 57...65

Testing:

1st rack travel in: 12.70
 Speed rpm : 1190...1200
 2nd rack travel in: 4.00
 Speed rpm : 1290...1320
 4th rack travel in: 1450
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
 position degrees: 18...26

Testing:

Speed rpm : 100
 Minimum rack travel: 8.90
 Speed rpm : 250
 Rack travel in mm : 7.30...7.50
 Rack travel in mm : 2.00
 Speed rpm : 430...490

Aneroid/Altitude
 Compensator Test

1st version

Setting
 Speed rpm : 500
 Pressure hPa : 1600
 Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
 Rack travel in m: 9.20...9.40
 2nd pressure hPa : 100
 Rack travel in m: 9.60...9.70
 3rd pressure hPa : 470
 Rack travel in m: 12.20...12.60

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm3/ : 149.0...151.0
 1000 s: (146.0...154.0)
 Spread cm3 : 8.00
 1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
 full load rack tr: 12.70
 Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm3/ : 100.0...120.0**
 1000 s: (-)

Speed rpm : 100
 Del.quantity cm3/ : 0 *
 1000 s: (-)
 Rack travel in mm : 17.50

HIGH IDLE

1st version

Speed rpm : 500
 Rack travel in mm : < 7.50
 Del.quantity cm3/ : 0 *
 1000 s: (-)

2nd version

Speed rpm : 500
 Rack travel in mm : < 8.00
 Del.quantity cm3/ : < 50.0 *
 1000 s: (-)

3rd version

Speed rpm : 500
 Rack travel in mm : 8.90...9.10
 Del.quantity cm3/ : 125.0
 1000 s: (-)

LOW IDLE

Speed rpm : 250
 Rack travel in mm : 7.30...7.50
 Del.quantity cm3/ : 52.0...60.0
 1000 s: (-)

Remarks:

: MAN-NR. 2-7961

* applies to cylinders 1, 2, 3, 7 and 9

** applies for cylinders 4, 5, 6, 8 and 10

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 18,3 L 2
Edition : 01.12.89
Replaces : 17.2.89
Test oil : ISO-4113

Combination no. : 0 402 649 808

Injection pump
Pump designation : PE10P120A320LS7809-1
EP type number : 0 412 629 801
Governor
Governor design. : RQ300/1050PA762-6
Governor no. : 0 421 801 471

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM443 A

1st version kW : 331.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 130...150

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
Rack travel in mm : 20.00...21.00
Firing order : 10- 9- 4- 1- 8- 7
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 216-261-288-333

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 18.5...18.7

100 s: (18.2...19.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.8

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del.quantity : 185.0...187.0

1000 : (182.0...190.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.30

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1165...1195

4th rack travel in: 1250

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 7.1

Testing:

Speed rpm : 200

Minimum rack travel: 9.20

Speed rpm : 300

Rack travel in mm : 6.80...7.40

Rack travel in mm : 2.00

Speed rpm : 395...435

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 13.30...13.40

2nd speed rpm : 750

Rack travel in m: 14.70...15.00

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 11.50...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : 300

Rack travel in m: 12.10...12.30

2nd pressure hPa : 550

Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 750

Del.quantity cm³/ : 202.0...205.0

1000 s: (199.0...208.0)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 129.0...131.0

1000 s: (126.0...134.0)

Spread cm³ : 8.00

1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 200.0...220.0

1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 18,2 h
Edition : 01.09.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 649 809

Injection pump
Pump designation : PE10P120A520LS7825
EP type number : 0 412 629 805
Governor
Governor design. : RQV250...1150PA902-3
Governor no. : 0 421 813 761

Customer-spec. information
Customer : MAN

Engine : D 2840 LXE

1st version kW : 603.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order : 10- 9- 4- 1- 8- 7
: - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
216-261-288-333
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 28.4...28.6

100 s: (28.1...28.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 500

Rack travel in mm : 8.8...9.0

Del.quantity cm3/ : 14.9...15.1

100 s: (14.6...15.4)

Spread cm3 : 0.8

100 s: (1.2)

3rd speed rpm : 250

Rack travel in mm : 7.30...7.50

Del.quantity cm3/ : 5.2...6.0 **

100 s: (-)

Spread cm3 : -

100 s: (-)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.90...1.10

2nd speed rpm : 450

travel mm : 2.90...3.50

3rd speed rpm : 750

travel mm : 5.50...5.90

4th speed rpm : 1150

travel mm : 9.20...9.40

5th speed rpm : 1400

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1225

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 284.0...286.0
1000 : (281.0...289.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 57...65

Testing:

1st rack travel in: 12.00
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 16...24

Testing:

Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 430...490

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 100
Rack travel in m: 9.30...9.40
3rd pressure hPa : 470
Rack travel in m: 11.80...12.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0**
1000 s: (-)
Rack travel in mm : 18.50

Speed rpm : 100
Del.quantity cm³/ : 0 *
1000 s: (-)
Rack travel in mm : 18.50

HIGH IDLE

1st version

Speed rpm : 500
Rack travel in mm : <7.00
Del.quantity cm³/ : 0 *
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : <7.50
Del.quantity cm³/ : <50.0
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.10...8.30
Del.quantity cm³/ : 125.0
1000 s: (-)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.30...7.50

Del.quantity cm³/ : 52.0...60.0 **
1000 s: (-)

Remarks:

: MAN-NR. 2-7961

* applies to cylinders 1, 2, 3, 7 and 9

** applies for cylinders 4, 5, 6, 8 and 10

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 18,3 L 3
Edition : 24.11.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 649 810

Injection pump
Pump designation : PE10P120A320LS7809
EP type number : 0 412 629 800
Governor
Governor design. : RQV350..1050PA870-6
Governor no. : 0 421 813 766

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM443 LA

1st version kW : 401.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h : 130...150

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
Rack travel in mm : 20.00...21.00
Firing order : 10- 9- 4- 1- 8- 7
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 216-261-288-333
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.30...14.50

Del. quantity cm³/ : 21.0...21.4

100 s : (20.7...21.7)

Spread cm³ : 0.5

100 s : (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 6.2...6.8
Del. quantity cm³/ : 1.6...2.2
100 s : (1.3...2.5)
Spread cm³ : 0.6
100 s : (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.90...2.10
2nd speed rpm : 700
travel mm : 4.10...4.50
3rd speed rpm : 1100
travel mm : 7.60...8.00
4th speed rpm : 1200
travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1100
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 750
Del.quantity : 210.0...214.0
1000 : (207.0...217.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 36...44

Testing:

1st rack travel in: 14.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 9...17

Testing:

Speed rpm : 200
Minimum rack travel: 8.60
Speed rpm : 350
Rack travel in mm : 6.20...6.80

CONSTANT REGULATION

Speed rpm : 300...400

TORQUE CONTROL

Dimension a mm : 0.40
2nd speed rpm : 1050
Rack travel in m: 15.10...15.30
3rd speed rpm : 800
Rack travel in m: 15.50...15.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 14.30...14.50

Measurement

Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 11.70...11.90
2nd pressure hPa : 550
Rack travel in m: 13.20...13.40
3rd pressure hPa : 960
Rack travel in m: 14.40...14.50

4th pressure hPa : 1100
Rack travel in m: 14.80...15.00
5th pressure hPa : -
Rack travel in m: 11.10...11.40

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 1050
Del.quantity cm³/ : 224.0...226.0
1000 s: (221.0...229.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1300
Speed rpm : 850
Del.quantity cm³/ : 232.0...236.0
1000 s: (229.0...239.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1300
Speed rpm : 1050
Del.quantity cm³/ : 168.0...170.0
1000 s: (165.0...173.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...136.0
1000 s: (129.0...139.0)
Spread cm³ : 8.00
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 z
Edition : 15.12.89
Replaces : 6.4.88
Test oil : ISO-4113

Combination no. : 0 402 670 800

Injection pump
Pump designation : PE12P120A320LS7805-1
EP type number : 0 412 620 804
Governor
Governor design. : RSV350...750POA825
Governor no. : 0 421 833 221

Customer spec. information

Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 389.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.10...14.20

Del.quantity cm3/ : 21.0...21.2

100 s: (20.7...21.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 210.0...212.0
1000 : (207.0...215.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 21...29

Testing:

1st rack travel in: 13.10
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 775...788
4th rack travel in: 1000
Speed rpm : 0.30...1.00

LOW IDLE 1

Control lever
position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 5.40...5.60

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm³/ : 207.0...213.0
1000 s: (204.0...216.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

:

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 y 1
Edition : 13.12.89
Replaces : 21.8.87
Test oil : ISO-4113

Combination no. : 0 402 670 802

Injection pump
Pump designation : PE12P120A320LS7807
EP type number : 0 412 620 806
Governor
Governor design. : RSV350...750POA825-2
Governor no. : 0 421 833 250

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 444 A

1st version kW : 360.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.40...15.50

Del.quantity cm3/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.5

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 215.0...217.0

1000 : (212.0...220.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 23...31

Testing:

1st rack travel in: 14.40
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 780...786
4th rack travel in: 1000
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack trave: 13.00
Speed rpm : 350
Rack travel in mm : 6.20...6.50

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 212.0...218.0
1000 s: (209.0...221.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.40
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.20...6.50
Del.quantity cm3/ : 14.0...20.0
1000 s: (11.0...23.0)

Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 j 1
Edition : 24.11.89
Replaces : 7.2.89
Test oil : ISO-4113

Combination no. : 0 402 670 804

Injection pump
Pump designation : PE12P120A320LS7813-1
EP type number : 0 412 620 811
Governor
Governor design. : RSV350...750POA825-5
Governor no. : 0 421 833 277

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 441.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 19.00...21.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 16.50...16.60

Del.quantity cm3/ : 28.0...28.2

100 s: (27.7...28.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.1...5.3
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 280.0...282.0
1000 : (277.0...285.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 20...28

Testing:

1st rack travel in: 13.10
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 775...788
4th rack travel in: 900
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.2
Speed rpm : 350
Rack travel in mm : 5.10...5.30

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.10
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 260.0...280.0
1000 s: (256.0...284.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 d
Edition : 13.12.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 670 807

Injection pump
Pump designation : PE12P120A320LS7814-1
EP type number : 0 412 620 819
Governor
Governor design. : RSV375..1050POA535-3
Governor no. : 0 421 833 328

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 588.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
Rack travel in mm : 19.00...21.00
Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 13.10...13.30

Del.quantity cm³/ : 26.2...26.5

100 s: (25.9...26.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 375.0

Rack travel in mm : 5.5...5.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 1050

Del.quantity : 262.0...265.0

1000 : (259.0...268.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 36...44

Testing:

1st rack travel in: 12.10
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 9.50
Speed rpm : 375
Rack travel in mm : 5.50...5.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1030
Rack travel in m: 13.10...13.20
2nd speed rpm : 950
Rack travel in m: 13.40...13.60
3rd speed rpm : 850
Rack travel in m: 13.90...14.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 13.10...13.30

Measurement

Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 9.00...9.20
2nd pressure hPa : 650
Rack travel in m: 11.30...11.50
3rd pressure hPa : 1420
Rack travel in m: 13.50...13.70
4th pressure hPa : -
Rack travel in m: 7.30...7.60

FUEL DELIVERY CHARACTERISTICS

K01

1st version

Aneroid pressure h: 1600
Speed rpm : 1030
Del.quantity cm3/ : 264.0...267.0
1000 s: (261.0...270.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 750
Del.quantity cm3/ : 286.0...289.0
1000 s: (283.0...292.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 750
Del.quantity cm3/ : 286.0...289.0
1000 s: (283.0...292.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 121.0...123.0
1000 s: (118.0...126.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...280.0
1000 s: (256.0...284.0)

Remarks:

:

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IFS 23,1 b
 Edition : 11.05.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 676 806
 Injection pump
 Pump designation : PE6P130A320RS7168
 EP type number : 0 412 636 810
 Governor
 Governor design. : RSV300...1500P2A542
 Governor no. : 0 421 833 308

Customer-spec. information
 Customer : ISOTTA

Engine : ID 38 SS 6 V

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 40...45

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 3- 4- 5- 6

Phasing : 0-45-120-165-240-285

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 19.7...20.0

100 s: (19.3...20.3)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 7.7...7.9

Del.quantity cm³/ : 2.0...2.6

100 s: (1.6...3.0)

Spread cm³ : 1.0

100 s: (1.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500

Del.quantity : 197.0...200.0

1000 : (193.5...203.5)

Spread cm³ : 6.00

1000 : (10.00)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 11.00

Speed rpm : 1540...1550

2nd rack travel in: 4.00

Speed rpm : 1595...1625

3rd rack travel in: 4.00

Speed rpm : 1620...1650

4th rack travel in: 1760
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3
Speed rpm : 300
Rack travel in mm : 7.70...7.90
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1500
Rack travel in m: 12.00...12.10
2nd speed rpm : 600
Rack travel in m: 12.00...12.20
3rd speed rpm : 275
Rack travel in m: 13.20...13.80

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1540...1550

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IFS 23,1 c
 Edition : 11.05.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 676 807
 Injection pump
 Pump designation : PE6P130A320LS7169
 EP type number : 0 412 636 811
 Governor
 Governor design. : RSV300...1500P2A542
 Governor no. : 0 421 833 308

Customer-spec. information
 Customer : ISOTTA

Engine : ID 38 SS 6 V

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 40...45

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 19.7...20.0

100 s: (19.3...20.3)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 7.7...7.9

Del.quantity cm3/ : 2.0...2.6

100 s: (1.6...3.0)

Spread cm3 : 1.0

100 s: (1.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500

Del.quantity : 197.0...200.0

1000 : (193.5...203.5)

Spread cm3 : 6.00

1000 : (10.00)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 11.00

Speed rpm : 1540...1550

2nd rack travel in: 4.00

Speed rpm : 1595...1625

3rd rack travel in: 4.00

Speed rpm : 1620...1650

4th rack travel in: 1760
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:

Speed rpm : 100
Speed rpm : 300
Rack travel in mm : 7.70...7.90
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1500
Rack travel in m: 12.00...12.10
2nd speed rpm : 600
Rack travel in m: 12.00...12.20
3rd speed rpm : 275
Rack travel in m: 13.20...13.80

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1540...1550

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

Note remarks

Combination no. : 0 402 678 802

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442A

1st version kW : 234.0
Rated speed : 2100

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

```

Prestroke mm      : 5.20...5.30
                  : (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order      : 8- 7- 2- 6- 3- 5-
                  : 4- 1

```

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 8

1st speed rpm : 1080

Rack travel in mm : 11.60...11.70

Del.quantity cm³/ : 16.3...16.5
100 s: (16.0...16.8)

Spread cm³ : 0.5

```

2nd speed      rpm : 650.0
Rack travel in mm : 4.1...4.3
Del.quantity   cm3/ : 1.6...2.2
              100 s : (1.3...2.5)
Spread         cm3 : 0.8
              100 s : (1..2)

```

Control-lever position

Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

```

1st version
Speed      rpm      : 1080
Del.quantity : 163.0...165.0
            1000    : (160.0...168.0)
Spread     cm3      : 5.00
            1000    : (9.00)

```

RATED SPEED

1st version

Control lever
position degrees: 34...42

Testing:

1st rack travel in: 10.60
Speed rpm : 1110...1120
2nd rack travel in: 4.00
Speed rpm : 1135...1150
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 650
Rack travel in mm : 4.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 650
Rack travel in mm : 4.10...4.30
Rack travel in mm : 2.00
Speed rpm : 650...710

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 11.60...11.70
2nd speed rpm : 900
Rack travel in m: 13.20...13.40
3rd speed rpm : 1000
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 900
Del.quantity cm³/ : 206.0...210.0
1000 s: (203.0...213.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

In order to adjust and test the EP combination, set full-load speed regul. at 1110...1120 1/min. Then set speed regul. to 1060...1070 1/min again.

APPLICATION

Forage harvester

1st rack travel in: 14.10
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 775...788
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 10...18
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:
Speed rpm : 100
Minimum rack travel: 15.00
Speed rpm : 350
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 350...410

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
2nd speed rpm : 900
Rack travel in m: 13.20...13.40
3rd speed rpm : 1000
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 233.0...239.0
1000 s: (230.0...242.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.10
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 230.0...250.0
1000 s: (226.0...254.0)

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 g 2
Edition : 01.12.89
Replaces : 30.3.87
Test oil : ISO-4113

Combination no. : 0 402 678 804

Injection pump
Pump designation : PE8P120A320LS7801-1
EP type number : 0 412 628 818
Governor
Governor design. : RSV350...750POA825-4
Governor no. : 0 421 833 261

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442LA

1st version kW : 255.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.70...15.80

Del.quantity cm3/ : 24.1...24.3
100 s: (23.8...24.6)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.4...5.8
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 241.0...243.0
1000 : (238.0...246.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control Lever
position degrees: 24...32

Testing:

1st rack travel in: 14.70
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 775...788
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 10...18
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 5.40...5.80
Rack travel in mm : 2.00
Speed rpm : 350...410

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

2nd speed rpm : 900
Rack travel in m: 13.20...13.40
3rd speed rpm : 1000
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 246.0...252.0
1000 s: (243.0...255.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.70
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 250.0...270.0
1000 s: (246.0...274.0)

Remarks:

APPLICATION :

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 g 6
 Edition : 20.10.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 678 812
 Injection pump
 Pump designation : PE8P120A320LS7801-2
 EP type number : 0 412 628 825
 Governor
 Governor design. : RSV350...1050POA535-
 2
 Governor no. : 0 421 833 318

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM442A

1st version kW : 260.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness : 6.00X1.50X1000
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (4.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...6.0

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Aneroid pressure h: 1100

Del.quantity : 181.0...183.0

1000 : (178.0...186.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 36...44

Testing:
1st rack travel in: 11.80
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.7

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 5.40...6.00
Rack travel in mm : 2.00
Speed rpm : 410...480

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1030
Rack travel in m: 12.80...12.90
2nd speed rpm : 950
Rack travel in m: 13.10...13.30
3rd speed rpm : 830
Rack travel in m: 13.80...14.00
4th speed rpm : 700
Rack travel in m: 14.40...14.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.20...11.50

Measurement
Speed 1/min : 500

1st pressure hPa : 420
Rack travel in m: 11.90...12.10
2nd pressure hPa : 600
Rack travel in m: 13.50...13.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 700
Del.quantity cm3/ : 213.0...217.0
1000 s: (210.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...200.0
1000 s: (176.0...204.0)

Remarks:

Observe VDT-I-420/120

Note remarks

Combination no. : 0 402 745 807

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

Phasing : 0-72-144-216-288

Tolerance \pm : 0.50 (0.75)

Time to cyl. no. : 5

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...7.0

Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm3 : 0.8
100 s: (1.2)

Control-Lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

- FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 650

Del.quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.7

Testing:

Speed rpm : 200
Minimum rack travel: 8.70
Speed rpm : 300
Rack travel in mm : 6.40...7.00
Rack travel in mm : 2.00
Speed rpm : 485...525

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 14.40...14.60
2nd speed rpm : 750
Rack travel in m: 14.90...15.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 12.20...12.40
2nd pressure hPa : 400
Rack travel in m: 13.50...13.70
3rd pressure hPa : 750
Rack travel in m: 14.20...14.30 *
4th pressure hPa : 850
Rack travel in m: 14.60...14.80
5th pressure hPa : -
Rack travel in m: 11.90...12.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 208.0...211.0
1000 s: (205.0...214.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 150.0...152.0
1000 s: (147.0...155.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 v
Edition : 02.10.89
Replaces : 15.8.89
Test oil : ISO-4113

Combination no. : 0 402 745 808

Injection pump
Pump designation : PES5P120A720LS7175
EP type number : 0 412 725 807
Governor
Governor design. : RQ300/1050PA774-4
Governor no. : 0 421 801 453

Customer spec. information
Customer : DAIMLER-BENZ

Engine : OM449 LA

1st version kW : 221.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm³/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 235.0...237.0

1000 : (232.0...240.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.60...5.90
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.65
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.00...13.20
2nd speed rpm : 750
Rack travel in m: 14.40...14.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 11.00...11.20
2nd pressure hPa : 450
Rack travel in m: 13.00...13.20
3rd pressure hPa : 1000
Rack travel in m: 13.70...13.80
4th pressure hPa : 1125
Rack travel in m: 14.10...14.30
5th pressure hPa : -
Rack travel in m: 10.00...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm3/ : 228.0...231.0
1000 s: (225.0...234.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 750
Del.quantity cm3/ : 250.0...254.0
1000 s: (247.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 146.0...148.0
1000 s: (143.0...151.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 m 3
Edition : 02.10.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 745 809
Injection pump
Pump designation : PES5P120A720LS7160
EP type number : 0 412 725 802
Governor
Governor design. : RQV300..1050PA940
Governor no. : 0 421 813 824

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM449 A

1st version kw : 184.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.10...13.30

Del.quantity cm3/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.3

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.10...1.30

2nd speed rpm : 600
travel mm : 4.90...5.10

3rd speed rpm : 800
travel mm : 5.80...6.10

4th speed rpm : 1100
travel mm : 8.20...8.60

5th speed rpm : 1175
travel mm : 9.50...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 650
Del.quantity : 196.0...198.0
1000 : (193.0...201.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 53...61

Testing:

1st rack travel in: 12.60
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 16...24

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.70...6.30

CONSTANT REGULATION

Speed rpm : 300...400

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.60...13.80
2nd speed rpm : 750
Rack travel in m: 14.00...14.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 13.10...13.30

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 11.20...11.40
2nd pressure hPa : 400
Rack travel in m: 12.50...12.70

3rd pressure hPa : 750
Rack travel in m: 13.20...13.30
4th pressure hPa : 850
Rack travel in m: 13.60...13.80
5th pressure hPa : -
Rack travel in m: 10.80...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 208.0...211.0
1000 s: (205.0...214.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 150.0...152.0
1000 s: (147.0...155.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 o 3
 Edition : 02.10.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 745 810
 Injection pump
 Pump designation : PES5P120A720LS7163
 EP type number : 0 412 725 803
 Governor
 Governor design. : RQV300..1050PA940-1
 Governor no. : 0 421 813 825

Customer spec. information
 Customer : DAIMLER-BENZ

Engine : OM449 LA

1st version kW : 221.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.6...5.9
 Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.30
 2nd speed rpm : 600
 travel mm : 4.90...5.10
 3rd speed rpm : 800
 travel mm : 5.80...6.10
 4th speed rpm : 1100
 travel mm : 8.20...8.60
 5th speed rpm : 1175
 travel mm : 9.50...10.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1070
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 800
Del.quantity : 235.0...237.0
1000 : (232.0...240.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 12.00
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 16...24

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.60...5.90

CONSTANT REGULATION
Speed rpm : 300...400

TORQUE CONTROL
Dimension a mm : 1.30
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.00...13.20
2nd speed rpm : 750
Rack travel in m: 14.40...14.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.60...13.80

Measurement
Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 11.00...11.20
2nd pressure hPa : 450
Rack travel in m: 13.00...13.20

3rd pressure hPa : 1000
Rack travel in m: 13.70...13.80
4th pressure hPa : 1125
Rack travel in m: 14.10...14.30
5th pressure hPa : -
Rack travel in m: 10.00...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm³/ : 228.0...231.0
1000 s: (225.0...234.0)
Spread cm³ : 8.00
1000 s: (12.)
Aneroid pressure h: 1400
Speed rpm : 750
Del.quantity cm³/ : 250.0...254.0
1000 s: (247.0...257.0)
Spread cm³ : 8.00
1000 s: (12.00)
Speed rpm : 500
Del.quantity cm³/ : 146.0...148.0
1000 s: (143.0...151.0)
Spread cm³ : 8.00
1000 s: (12.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 j
Edition : 07.02.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 812

Injection pump
Pump designation : PES6P120A320RS7136
EP type number : 0 412 726 809
Governor
Governor design. : RQV275...1000PA853
Governor no. : 0 421 813 610

Customer-spec. information
Customer : RVI

Engine : MIDR062045

1st version kW : 176.5
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
Rack travel in mm : 18.00...21.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.50...5.00
& maximum rack tra: 18.0...21.0
Difference, CS : 3.50...5.50

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.90...12.00

Del.quantity cm³/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.1...4.3

Del.quantity cm³/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 1.60...1.80

2nd speed rpm : 550
travel mm : 4.20...4.60

3rd speed rpm : 850
travel mm : 6.20...6.60

4th speed rpm : 1000
travel mm : 7.20...7.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 179.0...181.0
1000 : (176.0...184.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 10.00
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 200
Minimum rack travel: 5.70
Speed rpm : 275
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION
Speed rpm : 315...425

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 600
Rack travel in m: 11.90...12.00
2nd speed rpm : 1000
Rack travel in m: 10.90...11.00
3rd speed rpm : 800
Rack travel in m: 11.60...11.70
4th speed rpm : 900
Rack travel in m: 11.10...11.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.90...12.00

Measurement
Speed 1/min : 500

K23

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 400
Rack travel in m: 11.50...11.60
3rd pressure hPa : 200
Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1000
Del.quantity cm3/ : 155.0...159.0
1000 s: (152.0...162.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 120.0...122.0
1000 s: (117.0...125.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1065...1075

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...160.0
1000 s: (126.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 j 1
 Edition : 07.02.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 813
 Injection pump
 Pump designation : PES6P120A32ORS7136
 EP type number : 0 412 726 809
 Governor
 Governor design. : RQV275...1000PA855
 Governor no. : 0 421 813 611

Customer-spec. information
 Customer : RVI

Engine : MIDR062045

1st version kW : 198.5
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 18.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.50...5.00
 & maximum rack tra: 18.0...21.0
 Difference, CS : 3.50...5.50

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 18.4...18.6

100 s: (18.1...18.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
 travel mm : 1.60...1.80

2nd speed rpm : 550
 travel mm : 4.20...4.60

3rd speed rpm : 850
 travel mm : 6.20...6.60

4th speed rpm : 1000
 travel mm : 7.20...7.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 184.0...186.0
1000 : (181.0...189.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 10.90
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 200
Minimum rack travel: 5.70
Speed rpm : 275
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION
Speed rpm : 315...425

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.90...12.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 400
Rack travel in m: 11.50...11.60
3rd pressure hPa : 200
Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 178.0...184.0
1000 s: (175.0...187.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 120.0...122.0
1000 s: (117.0...125.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 1065...1075

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...160.0
1000 s: (126.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 e
Edition : 12.01.90
Replaces : 30.10.89
Test oil : ISO-4113

Combination no. : 0 402 746 842

Injection pump
Pump designation : PES6P120A720RS7164
EP type number : 0 412 726 816
Governor
Governor design. : RQV325...875PA848-17
K
Governor no. : 0 421 815 200

Customer-spec. information
Customer : MACK

Engine : EMC6 300L 4VH

1st version kW : 200.0
Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 11.00...13.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 14.90...15.00

Del.quantity cm3/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 850

travel mm : 5.90...6.10

4th speed rpm : 1000

travel mm : 7.40...7.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 54...62

Testing:

1st rack travel in: 13.90
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1160
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 275
Minimum rack travel: 6.20
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 14.90...15.00
2nd speed rpm : 510
Rack travel in m: 16.80...17.00
3rd speed rpm : 700
Rack travel in m: 15.60...15.80
4th speed rpm : 600
Rack travel in m: 16.40...16.70
5th speed rpm : 420
Rack travel in m: 0.00...16.80

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 16.80...17.00

Measurement

Speed 1/min : 510

1st pressure hPa : -

K27

Rack travel in m: 10.90...11.30
2nd pressure hPa : 375
Rack travel in m: 12.70...12.80
3rd pressure hPa : 735
Rack travel in m: 15.70...16.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm3/ : 305.0...311.0
1000 s: (302.0...314.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 156.0...160.0
1000 s: (154.0...162.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...200.0
1000 s: (150.0...210.0)
Rack travel in mm : 10.90...11.30

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.0...3.2 mm.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 12,2 e1
 Edition : 24.11.89
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 746 844

Injection pump
 Pump designation : PES6P120A320RS7162
 EP type number : 0 412 726 819
 Governor
 Governor design. : RQ750PA836
 Governor no. : 0 421 801 373

Customer spec. information
 Customer : PERKINS

Engine : 2006 TAG

1st version kW : 280.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del. quantity cm³/ : 37.9...38.1

100 s: (37.6...38.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.5...5.7

Del. quantity cm³/ : 3.8...4.4

100 s: (3.5...4.7)

Spread cm³ : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 379.0...381.0

1000 : (376.0...384.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.00

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 780...793

4th rack travel in: 820

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 300.0...340.0
1000 s: (296.0...344.0)

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 12,2 e
Edition : 29.03.89
Replaces : 27.10.88
Test oil : ISO-4113

Combination no. : 0 402 746 844

Injection pump
Pump designation : PES6P120A320RS7162
EP type number : 0 412 726 819
Governor
Governor design. : RQ750PA836-1
Governor no. : 0 421 801 454

Customer-spec. information
Customer : PERKINS

Engine : 2006 TAG

1st version kw : 280.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 37.9...38.1

100 s: (37.6...38.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 3.8...4.4

100 s: (3.5...4.7)

Spread cm3 : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 379.0...381.0

1000 : (376.0...384.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.00

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 785...795

4th rack travel in: 820

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 300.0...340.0
1000 s: (296.0...344.0)

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1a13
 Edition : 15.12.89
 Replaces : 31.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 850

Injection pump
 Pump designation : PES6P12QA72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...900PA848-24
 K
 Governor no. : 0 421 815 207

Customer-spec. information
 Customer : MACK

Engine : E6-350

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.80...14.90

Del.quantity cm³/ : 24.8...25.0
 100 s: (24.5...25.3)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.9...5.1
 Del.quantity cm³/ : 3.9...4.5
 100 s: (3.7...4.7)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40
 2nd speed rpm : 450
 travel mm : 3.10...3.30
 3rd speed rpm : 850
 travel mm : 5.90...6.10
 4th speed rpm : 1000
 travel mm : 7.50...7.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 1200

Del.quantity : 248.5...250.5
1000 : (245.5...253.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:

1st rack travel in: 13.80
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 6.60
Speed rpm : 325
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 14.80...14.90
2nd speed rpm : 625
Rack travel in m: 15.20...15.30
3rd speed rpm : 700
Rack travel in m: 15.00...15.10
4th speed rpm : 500
Rack travel in m: 0.00...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 625
Pressure hPa : 1200
Rack travel mm : 15.20...15.30

Measurement

Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 8.30...8.70
2nd pressure hPa : 310

Rack travel in m: 10.20...10.30
3rd pressure hPa : 710
Rack travel in m: 13.70...14.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm3/ : 271.0...277.0
1000 s: (268.0...280.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 130.5...134.5
1000 s: (128.5...136.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 950...960

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (120.0...180.0)
Rack travel in mm : 8.30...8.70

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5184-P10

Delivery-valve spring pre-tension
3.0...3.2 mm.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a3
 Edition : 02.01.90
 Replaces : 31.10.89
 Test oil : ISO-4113
 Combination no. : 0 402 746 852
 Injection pump
 Pump designation : PES6P120A72ORS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...900PA909K
 Governor no. : 0 421 815 210

Customer spec. information
 Customer : MACK

Engine : E7-400

1st version kW : 298.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.80...15.90

Del. quantity cm3/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 5.1...5.3

Del. quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200
Del.quantity : 275.0...277.0
1000 : (272.0...280.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:

1st rack travel in: 14.80
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1105...1135
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 6.30
Speed rpm : 325
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 15.80...15.90
2nd speed rpm : 625
Rack travel in m: 15.20...15.40
3rd speed rpm : 700
Rack travel in m: 15.40...15.60
4th speed rpm : 500
Rack travel in m: 0.00...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 15.80...15.90

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.50...8.90

2nd pressure hPa : 325
Rack travel in m: 10.20...10.30
3rd pressure hPa : 790
Rack travel in m: 13.80...14.20

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm3/ : 302.5...308.5
1000 s: (299.5...311.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 157.5...161.5
1000 s: (155.5...163.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.80
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...220.0
1000 s: (170.0...230.0)
Rack travel in mm : 10.80...11.40

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P6

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a4
 Edition : 15.12.89
 Replaces : 31.10.89
 Test oil : ISO-4113
 Combination no. : 0 402 746 853
 Injection pump
 Pump designation : PES6P120A720RS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RGV325...900PA909-1K
 Governor no. : 0 421 815 211

Customer-spec. information
 Customer : MACK

Engine : E7-350

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. , C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.20

3rd speed rpm : 650
 travel mm : 5.60...5.80

4th speed rpm : 900
 travel mm : 8.30...8.50

5th speed rpm : 1100
 travel mm : 10.30...10.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1100

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200
Del.quantity : 233.5...235.5
1000 : (230.5...238.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:

1st rack travel in: 12.80
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack trave: 5.90
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.80...13.90
2nd speed rpm : 625
Rack travel in m: 13.60...13.80
3rd speed rpm : 500
Rack travel in m: 11.60...12.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.00...8.40
2nd pressure hPa : 325
Rack travel in m: 9.40...9.50

3rd pressure hPa : 685
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm3/ : 266.0...272.0
1000 s: (263.0...275.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 153.0...157.0
1000 s: (151.0...159.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...210.0
1000 s: (160.0...220.0)
Rack travel in mm : 10.30...10.90

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P2

Bow dimension:

Sliding-sleeve position = 37.0 mm
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,0 a 3
 Edition : 24.11.89
 Replaces : 25.8.89
 Test oil : ISO-4113
 Combination no. : 0 402 746 854
 Injection pump
 Pump designation : PES6P120A720LS7114-3
 EP type number : 0 412 726 820
 Governor
 Governor design. : RQ300/1050PA911
 Governor no. : 0 421 801 476

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 LA

1st version kW : 257.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 13.60...13.80
 Del.quantity cm3/ : 22.9...23.1
 100 s: (22.6...23.4)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.8...6.2
 Del.quantity cm3/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 800
 Del.quantity : 229.0...231.0
 1000 : (226.0...234.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0
Speed rpm : 300
Rack travel in mm : 5.80...6.20
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.40
2nd speed rpm : 1050
Rack travel in m: 13.60...13.80
3rd speed rpm : 700
Rack travel in m: 14.10...14.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.20...11.40
2nd pressure hPa : 600
Rack travel in m: 13.10...13.30
3rd pressure hPa : 1000
Rack travel in m: 13.70...13.80 *
4th pressure hPa : 1100
Rack travel in m: 13.90...14.10
5th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050

Del.quantity cm³/ : 229.0...233.0
1000 s: (226.0...236.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm³/ : 244.0...247.0
1000 s: (241.0...250.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 146.0...148.0
1000 s: (143.0...151.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,0 e
Edition : 24.11.89
Replaces : 15.8.89
Test oil : ISO-4113

Combination no. : 0 402 746 855

Injection pump
Pump designation : PES6P120A720LS7176
EP type number : 0 412 726 821
Governor
Governor design. : RQ300/105DPA897
Governor no. : 0 421 801 452

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM447 A

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.6

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 680

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 6.00...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.50...13.70
2nd speed rpm : 750
Rack travel in m: 14.70...14.90

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 680
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.40...12.60
2nd pressure hPa : 400
Rack travel in m: 13.10...13.30
3rd pressure hPa : 800
Rack travel in m: 14.20...14.30 *
4th pressure hPa : -
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 193.0...195.0
1000 s: (190.0...198.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 218.0...222.0
1000 s: (215.0...225.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...200.0
1000 s: (176.0...204.0)

Remarks:

Adjust full-load delivery by turning temperature-dependent excess-fuel stop for starting (TAS).

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SSC 10,5 f
Edition : 13.12.89
Replaces : 16.6.89
Test oil : ISO-4113

Combination no. : 0 402 746 856

Injection pump
Pump designation : PES6P130A320LS7173
EP type number : 0 412 736 802
Governor
Governor design. : RQV300...750PA914
Governor no. : 0 421 813 747

Customer-spec. information
Customer : SSCM

Engine : UD25-L6

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 443 022

Opening
pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter
x Wall thickness
x Length mm : 8.00X2.00X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 48.0...48.3

100 s: (47.6...48.6)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...5.3

Del.quantity cm³/ : 4.7...5.3

100 s: (4.3...5.7)

Spread cm³ : 1.0

100 s: (1.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.10...1.50

2nd speed rpm : 600
travel mm : 5.10...5.70

3rd speed rpm : 750
travel mm : 7.70...7.90

4th speed rpm : 1000
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 800

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 480.0...483.0

1000 : (476.5...486.5)

Spread cm³ : 6.00

1000 : (10.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:
1st rack travel in: 11.30
Speed rpm : 790...800
2nd rack travel in: 4.00
Speed rpm : 840...870

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 315...445

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 790...800

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 9,5 a 1
 Edition : 15.12.89
 Replaces : 28.6.89
 Test oil : ISO-4113
 Combination no. : 0 402 746 857
 Injection pump
 Pump designation : PES6P120A720RS7177
 EP type number : 0 412 726 823
 Governor
 Governor design. : RQ275/1100PA915
 Governor no. : 0 421 801 478

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8460.41.601

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 12.30...12.40
 Del.quantity cm³/ : 18.8...19.0
 100 s: (18.5...19.3)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 275.0
 Rack travel in mm : 5.7...5.9
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 900
 Del.quantity : 188.0...190.0
 1000 : (185.0...193.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
 1st rack travel in: 11.30
 Speed rpm : 1145...1160
 2nd rack travel in: 4.00
 Speed rpm : 1230...1260

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.8

Testing:
Speed rpm : 100
Minimum rack travel: 7.30
Speed rpm : 275
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION
Speed rpm : 330...370

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.60...12.70
2nd speed rpm : 600
Rack travel in m: 12.60...12.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.80
2nd pressure hPa : 320
Rack travel in m: 11.30...11.40
3rd pressure hPa : 270
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...155.0
1000 s: (121.0...159.0)

Remarks:

APPLICATION

Ship

Testing:

1st rack travel in: 13.90
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0
Speed rpm : 300
Rack travel in mm : 5.80...6.20
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 850
Rack travel in m: 15.60...15.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 15.20...15.40

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.90...11.10
2nd pressure hPa : 700
Rack travel in m: 14.00...14.20
3rd pressure hPa : 1300
Rack travel in m: 15.40...15.60
4th pressure hPa : 1450
Rack travel in m: 15.90...16.10
5th pressure hPa : -
Rack travel in m: 10.00...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050

Del.quantity cm3/ : 269.0...272.0
1000 s: (266.0...275.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 700
Del.quantity cm3/ : 298.0...301.0
1000 s: (295.0...304.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 250.0...270.0
1000 s: (246.0...274.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,0 a 5
Edition : 02.10.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 859

Injection pump
Pump designation : PES6P120A720LS7114-2
EP type number : 0 412 726 815
Governor
Governor design. : RQV300..1050PA940-2
Governor no. : 0 421 813 826

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM447 LA

1st version kW : 265.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del. quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del. quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.10...1.30

2nd speed rpm : 600
travel mm : 4.90...5.10

3rd speed rpm : 800
travel mm : 5.90...6.20

4th speed rpm : 1100
travel mm : 8.10...8.50

5th speed rpm : 1175
travel mm : 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 53...61

Testing:

1st rack travel in: 13.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 16...24

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.80...6.20

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 14.20...14.40
3rd speed rpm : 700
Rack travel in m: 14.70...14.90

Aneroid/Altitude

Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.80...12.00
2nd pressure hPa : 500
Rack travel in m: 13.40...13.60
3rd pressure hPa : 1100

Rack travel in m: 14.20...14.40
4th pressure hPa : 1200
Rack travel in m: 14.50...14.70
5th pressure hPa : -
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm³/ : 234.0...238.0
1000 s: (231.0...341.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 700
Del.quantity cm³/ : 246.0...249.0
1000 s: (243.0...252.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 146.0...148.0
1000 s: (143.0...151.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,0 d 3
Edition : 02.10.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 860

Injection pump
Pump designation : PES6P120A720LS7161
EP type number : 0 412 726 817
Governor
Governor design. : RQV300..1050PA940-3
Governor no. : 0 421 813 827

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM447 A

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.6

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.10...1.30

2nd speed rpm : 600
travel mm : 4.90...5.10

3rd speed rpm : 800
travel mm : 5.90...6.20

4th speed rpm : 1100
travel mm : 8.10...8.50

5th speed rpm : 1175
travel mm : 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h : 680
Del.quantity : 201.0...203.0
1000 : (198.0...206.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 53...61

Testing:
1st rack travel in: 12.60
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 16...24

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION
Speed rpm : 300...450

TORQUE CONTROL
Dimension a mm : 1.20
2nd speed rpm : 1050
Rack travel in m: 13.60...13.80
3rd speed rpm : 750
Rack travel in m: 14.80...15.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 680
Rack travel mm : 14.10...14.30

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.30...12.50
2nd pressure hPa : 400
Rack travel in m: 13.20...13.40
3rd pressure hPa : 800

Rack travel in m: 14.20...14.30 *
4th pressure hPa : -
Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 193.0...195.0
1000 s: (190.0...198.0)
Spread cm3 : 8.00
1000 s: (12.)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 218.0...222.0
1000 s: (215.0...225.0)
Spread cm3 : 8.00
1000 s: (12.00)
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 f
Edition : 28.09.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 862

Injection pump
Pump designation : PES6P120A720RS7183
EP type number : 0 412 726 825
Governor
Governor design. : RQV325...875PA878-11
K
Governor no. : 0 421 815 213

Customer spec. information
Customer : MACK TRUCKS

Engine : EM 6-300L

1st version kW : 183.0
Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 6.00...8.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.20...11.30

Del. quantity cm³/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.6...4.8

Del. quantity cm³/ : 4.1...4.7

100 s: (3.9...4.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.20...1.40

2nd speed rpm : 450
travel mm : 2.50...2.80

3rd speed rpm : 600
travel mm : 4.10...4.30

4th speed rpm : 875
travel mm : 7.30...7.50

5th speed rpm : 1000
travel mm : 8.70...9.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875
Aneroid pressure h: 1500
Del.quantity : 209.0...211.0
1000 : (206.0...214.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:
1st rack travel in: 10.20
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1000...1030
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 275
Minimum rack trave: 6.30
Speed rpm : 325
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 11.20...11.30
2nd speed rpm : 510
Rack travel in m: 16.60...16.80
3rd speed rpm : 700
Rack travel in m: 13.30...13.50
4th speed rpm : 600
Rack travel in m: 15.50...15.70
5th speed rpm : 450
Rack travel in m: 0.00...16.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 1500
Rack travel mm : 16.60...16.80

Measurement
Speed 1/min : 510

L25

1st pressure hPa : -
Rack travel in m: 8.70...9.10
2nd pressure hPa : 435
Rack travel in m: 10.80...11.00
3rd pressure hPa : 795
Rack travel in m: 14.60...15.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 510
Del.quantity cm3/ : 308.0...314.0
1000 s: (305.0...317.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 154.0...158.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.20
Speed rpm : 915...925

INTERMEDIATE RATED SPEED
Rack travel in mm : 11.20
Speed rpm : 805

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 165.0...205.0
1000 s: (160.0...210.0)
Rack travel in mm : 8.70...9.10

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 41.0...47.0
1000 s: (39.0...49.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MACK # 313GC5174-P8

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Delivery-valve spring pre-tension

3.0...3.2 mm.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 e1
 Edition : 28.09.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 864
 Injection pump
 Pump designation : PES6P120A720RS7164
 EP type number : 0 412 726 816
 Governor
 Governor design. : RQV325...875PA848-12
 K
 Governor no. : 0 421 815 215

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EC6-350 4VH

1st version kW : 261.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 12.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 16.00...16.10

Del.quantity cm³/ : 25.5...25.7

100 s: (25.2...26.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.3...4.5

Del.quantity cm³/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 850

travel mm : 5.90...6.10

4th speed rpm : 1000

travel mm : 7.40...7.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 255.5...257.5
1000 : (252.5...260.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:

1st rack travel in: 15.00
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 275
Minimum rack trave: 5.90
Speed rpm : 325
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 16.00...16.10
2nd speed rpm : 625
Rack travel in m: 16.50...16.70
3rd speed rpm : 550
Rack travel in m: 0.00...16.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 625
Pressure hPa : 1200
Rack travel mm : 16.50...16.70

Measurement

Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 9.40...9.80
2nd pressure hPa : 265
Rack travel in m: 11.30...11.40
3rd pressure hPa : 665

Rack travel in m: 14.70...15.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm³/ : 280.0...286.0
1000 s: (277.0...289.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 141.5...145.5
1000 s: (139.5...147.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 15.00
Speed rpm : 950...960

INTERMEDIATE RATED SPEED

Rack travel in mm : 13.70
Speed rpm : 850

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (125.0...185.0)
Rack travel in mm : 9.40...9.80

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.50
Del.quantity cm³/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5181P12

Delivery-valve spring pre-tension
3.0...3.2 mm.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 e2
 Edition : 28.09.89
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 746 865

Injection pump
 Pump designation : PES6P120A72ORS7164
 EP type number : 0 412 726 816
 Governor
 Governor design. : RQV325...875PA848-13
 K
 Governor no. : 0 421 815 216

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EM6-275L 4VH

1st version kW : 205.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 12.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + -, : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.3...4.5

Del.quantity cm3/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.10

3rd speed rpm : 850
 travel mm : 6.20...6.40

4th speed rpm : 1000
 travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 1200

Del.quantity : 201.5...203.5
1000 : (198.5...206.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 55...63

Testing:

1st rack travel in: 12.90
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 10...18

Testing:

Speed rpm : 275
Minimum rack travel: 5.90
Speed rpm : 325
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 13.90...14.00
2nd speed rpm : 510
Rack travel in m: 16.00...16.20
3rd speed rpm : 800
Rack travel in m: 14.20...14.40
4th speed rpm : 600
Rack travel in m: 15.30...15.50
5th speed rpm : 420
Rack travel in m: 0.00...15.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 16.00...16.20

Measurement

Speed 1/min : 510

1st pressure hPa : -

MO2

Rack travel in m: 10.70...11.10
2nd pressure hPa : 285
Rack travel in m: 12.10...12.20
3rd pressure hPa : 505
Rack travel in m: 15.40...15.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm3/ : 281.0...287.0
1000 s: (279.0...290.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 152.0...156.0
1000 s: (150.0...158.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 915...925

INTERMEDIATE RATED SPEED

Rack travel in mm : 10.30
Speed rpm : 805

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 185.0...225.0
1000 s: (175.0...235.0)
Rack travel in mm : 10.70...11.10

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.50
Del.quantity cm3/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5181P8

Delivery-valve spring pre-tension
3.0...3.2 mm.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a5
 Edition : 28.09.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 866
 Injection pump
 Pump designation : PES6P120A72ORS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...875PA909-2K
 Governor no. : 0 421 815 217

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EM7-300L

1st version kW : 224.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.8...5.0

Del.quantity cm³/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.20

3rd speed rpm : 650
 travel mm : 5.60...5.80

4th speed rpm : 900
 travel mm : 8.30...8.50

5th speed rpm : 1100
 travel mm : 10.30...10.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 1200

Del.quantity : 212.5...214.5
1000 : (209.5...217.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:

1st rack travel in: 11.70
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 12.70...12.80
2nd speed rpm : 510
Rack travel in m: 13.95...14.15
3rd speed rpm : 400
Rack travel in m: 0.00...13.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 13.95...14.15

Measurement

Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.10...8.50
2nd pressure hPa : 370
Rack travel in m: 9.50...9.60
3rd pressure hPa : 740

Rack travel in m: 12.30...12.70

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm3/ : 296.5...302.5
1000 s: (293.5...305.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 157.5...161.5
1000 s: (155.5...163.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...220.0
1000 s: (170.0...230.0)
Rack travel in mm : 10.40...11.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P10
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 e3
 Edition : 28.09.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 867
 Injection pump
 Pump designation : PES6P12QA72ORS7164
 EP type number : 0 412 726 816
 Governor
 Governor design. : RQV325...875PA848-27
 K
 Governor no. : 0 421 815 218

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EC6-350 4VH

1st version kW : 261.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness : 6.00X2.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 12.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 16.00...16.10

Del.quantity cm³/ : 25.5...25.7

100 s: (25.2...26.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.3...4.5

Del.quantity cm³/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 850

travel mm : 5.90...6.10

4th speed rpm : 1000

travel mm : 7.40...7.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 255.5...257.5
1000 : (252.5...260.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:

1st rack travel in: 15.00
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 275
Minimum rack travel: 5.90
Speed rpm : 325
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 16.00...16.10
2nd speed rpm : 625
Rack travel in m: 16.50...16.70
3rd speed rpm : 550
Rack travel in m: 0.00...16.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 625
Pressure hPa : 1200
Rack travel mm : 16.50...16.70

Measurement

Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 9.40...9.80
2nd pressure hPa : 265
Rack travel in m: 11.30...11.40
3rd pressure hPa : 665

Rack travel in m: 14.70...15.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm³/ : 280.0...286.0
1000 s: (277.0...289.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 141.5...145.5
1000 s: (139.5...147.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.00
Speed rpm : 950...960

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (125.0...185.0)
Rack travel in mm : 9.40...9.80

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.50
Del.quantity cm³/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5181P10

Delivery-valve spring pre-tension
3.0...3.2 mm.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 e4
 Edition : 02.01.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 867
 Injection pump
 Pump designation : PES6P120A72ORS7164
 EP type number : 0 412 726 816
 Governor
 Governor design. : RQV325...900PA848-27
 K
 Governor no. : 0 421 815 218

Customer-spec. information
 Customer : MACK

Engine : EC6-350 4VH

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 12.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900
 Rack travel in mm : 16.00...16.10
 Del.quantity cm3/ : 25.5...25.7
 100 s: (25.2...26.0)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.3...4.5
 Del.quantity cm3/ : 3.9...4.5
 100 s: (3.7...4.7)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40
 2nd speed rpm : 450
 travel mm : 3.00...3.40
 3rd speed rpm : 850
 travel mm : 5.90...6.10
 4th speed rpm : 1000
 travel mm : 7.40...7.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1120
 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 1200

Del.quantity : 255.5...257.5
1000 : (252.5...260.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:

1st rack travel in: 15.00
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 275
Minimum rack travel: 5.90
Speed rpm : 325
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 16.00...16.10
2nd speed rpm : 625
Rack travel in m: 16.50...16.70
3rd speed rpm : 550
Rack travel in m: 0.00...16.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 16.50...16.70

Measurement

Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 9.40...9.80
2nd pressure hPa : 265
Rack travel in m: 11.30...11.40
3rd pressure hPa : 665

Rack travel in m: 14.70...15.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm3/ : 280.0...286.0
1000 s: (277.0...289.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 141.5...145.5
1000 s: (139.5...147.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 15.00
Speed rpm : 950...960

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...175.0
1000 s: (125.0...185.0)
Rack travel in mm : 9.40...9.80

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.50
Del.quantity cm3/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5181P10

Delivery-valve spring pre-tension
3.0...3.2 mm.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 e5
 Edition : 15.12.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 868
 Injection pump
 Pump designation : PES6P120A720RS7164
 EP type number : 0 412 726 816
 Governor
 Governor design. : RQV325...875PA848-28
 K
 Governor no. : 0 421 815 219

Customer-spec. information
 Customer : MACK

Engine : EM6-275L 4VH

1st version kW : 205.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 12.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 19.6...19.8

100 s: (19.4...20.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.3...4.5

Del.quantity cm3/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.10

3rd speed rpm : 850
 travel mm : 6.20...6.40

4th speed rpm : 1000
 travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 196.0...198.0
1000 : (194.0...200.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 54...62

Testing:

1st rack travel in: 12.60
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1045...1075
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 275
Minimum rack travel: 5.90
Speed rpm : 325
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 13.60...13.70
2nd speed rpm : 510
Rack travel in m: 15.20...15.40
3rd speed rpm : 750
Rack travel in m: 13.80...14.10
4th speed rpm : 600
Rack travel in m: 14.90...15.10
5th speed rpm : 450
Rack travel in m: 0.00...15.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 15.20...15.40

Measurement

Speed 1/min : 510

1st pressure hPa : -

Rack travel in m: 10.70...11.10
2nd pressure hPa : 265
Rack travel in m: 12.10...12.20
3rd pressure hPa : 450
Rack travel in m: 14.00...14.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm³/ : 259.5...265.5
1000 s: (257.5...267.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 152.0...156.0
1000 s: (150.0...158.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 185.0...225.0
1000 s: (175.0...235.0)
Rack travel in mm : 10.70...11.10

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.50
Del.quantity cm³/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5181P6

Delivery-valve spring pre-tension
3.0...3.2 mm.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 e6
 Edition : 28.09.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 869
 Injection pump
 Pump designation : PES6P120A720RS7164
 EP type number : 0 412 726 816
 Governor
 Governor design. : RQV325...875PA848-29
 K
 Governor no. : 0 421 815 220

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EMC6 250L 4VH

1st version kW : 196.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 12.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + -, : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 13.00...13.10

Del.quantity cm³/ : 18.4...18.6

100 s: (18.2...18.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.3...4.5

Del.quantity cm³/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 900

Del.quantity : 184.0...186.0
1000 : (182.0...188.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:
1st rack travel in: 12.00
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1045...1065
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 275
Minimum rack trave: 5.90
Speed rpm : 325
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 13.00...13.10
2nd speed rpm : 510
Rack travel in m: 14.90...15.10
3rd speed rpm : 600
Rack travel in m: 14.00...14.20
4th speed rpm : 450
Rack travel in m: 0.00...14.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 900
Rack travel mm : 14.90...15.10

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 10.40...10.80
2nd pressure hPa : 205

Rack travel in m: 11.70...11.80
3rd pressure hPa : 460
Rack travel in m: 13.70...14.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 510
Del.quantity cm3/ : 252.0...258.0
1000 s: (250.0...260.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 152.0...156.0
1000 s: (150.0...158.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...200.0
1000 s: (150.0...210.0)
Rack travel in mm : 10.40...10.80

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.50
Del.quantity cm3/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5181P4

Delivery-valve spring pre-tension
3.0...3.2 mm.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a6
Edition : 28.09.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 870

Injection pump
Pump designation : PES6P120A720RS7157
EP type number : 0 412 726 814
Governor
Governor design. : RQV325...875PA878-14
K

Governer no. : 0 421 815 222

Customer-spec. information
Customer : MACK

Engine : EM7-250L 4VH

1st version kW : 187.0
Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875
Rack travel in mm : 10.40...10.50
Del.quantity cm3/ : 17.4...17.6
100 s: (17.1...17.9)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.7...4.9
Del.quantity cm3/ : 4.0...4.6
100 s: (3.8...4.8)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.30...1.60
2nd speed rpm : 500
travel mm : 3.40...4.00
3rd speed rpm : 900
travel mm : 6.70...6.90
4th speed rpm : 1075
travel mm : 8.40...8.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 875
Aneroid pressure h: 900
Del.quantity : 174.0...176.0
1000 : (171.0...179.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 54...62

Testing:
1st rack travel in: 9.40
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1020...1050
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 12...20

Testing:
Speed rpm : 275
Minimum rack travel: 6.30
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 10.40...10.50
2nd speed rpm : 510
Rack travel in m: 11.90...12.10
3rd speed rpm : 450
Rack travel in m: 0.00...11.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 900
Rack travel mm : 11.90...12.10

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 7.80...8.20
2nd pressure hPa : 235
Rack travel in m: 8.80...8.90
3rd pressure hPa : 485
Rack travel in m: 10.80...11.20

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 510
Del.quantity cm3/ : 244.0...250.0
1000 s: (241.0...253.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 151.0...155.0
1000 s: (149.0...157.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.40
Speed rpm : 915...925

INTERMEDIATE RATED SPEED
Rack travel in mm : 9.80
Speed rpm : 805.0

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...210.0
1000 s: (160.0...220.0)
Rack travel in mm : 10.10...10.30

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5179-P28

Delivery-valve spring pre-tension
3.0...3.2 mm.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 c
Edition : 28.09.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 746 871
Injection pump
Pump designation : PES6P120A720RS7157
EP type number : 0 412 726 814
Governor
Governor design. : RQV325...900PA929K
Governor no. : 0 421 815 223

Customer-spec. information
Customer : MACK TRUCKS

Engine : E7-400

1st version kW : 298.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve
: 2 417 413 011

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.80...15.90

Del.quantity cm3/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 275.0...277.0
1000 : (272.0...280.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:

1st rack travel in: 14.80
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1105...1135
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 6.30
Speed rpm : 325
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 15.80...15.90
2nd speed rpm : 625
Rack travel in m: 15.20...15.40
3rd speed rpm : 700
Rack travel in m: 15.40...15.60
4th speed rpm : 500
Rack travel in m: 0.00...13.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 15.80...15.90

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.10...8.50
2nd pressure hPa : 325

Rack travel in m: 10.20...10.30
3rd pressure hPa : 790
Rack travel in m: 13.80...14.20

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm3/ : 302.5...308.5
1000 s: (299.5...311.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 157.5...161.5
1000 s: (155.5...163.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.80
Speed rpm : 940...950

INTERMEDIATE RATED SPEED

Rack travel in mm : 14.70
Speed rpm : 850

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...220.0
1000 s: (170.0...230.0)
Rack travel in mm : 10.40...11.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P8
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 c1
Edition : 28.09.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 746 872
Injection pump
Pump designation : PES6P120A720RS7157
EP type number : 0 412 726 814
Governor
Governor design. : RQV325...900PA929-1K
Governor no. : 0 421 815 224

Customer-spec. information
Customer : MACK TRUCKS

Engine : E7-350

1st version kW : 261.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
(2.70...2.90)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + -., : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.80...13.90

Del.quantity cm³/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm³/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 233.5...235.5
1000 : (230.5...238.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:

1st rack travel in: 12.80
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 5.90
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.80...13.90
2nd speed rpm : 625
Rack travel in m: 13.60...13.80
3rd speed rpm : 500
Rack travel in m: 11.60...12.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.00...8.40
2nd pressure hPa : 325
Rack travel in m: 9.40...9.50
3rd pressure hPa : 685

Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm³/ : 266.0...272.0
1000 s: (263.0...275.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 153.0...157.0
1000 s: (151.0...159.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 940...950

INTERMEDIATE RATED SPEED

Rack travel in mm : 12.70
Speed rpm : 850

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...210.0
1000 s: (160.0...220.0)
Rack travel in mm : 10.30...10.90

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm³/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P4
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 c2
 Edition : 28.09.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 873
 Injection pump
 Pump designation : PES6P120A720RS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...875PA929-2K
 Governor no. : 0 421 815 225

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EM7-300L

1st version kW : 224.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.8...5.0
 Del.quantity cm3/ : 4.0...4.6
 100 s: (3.8...4.8)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40
 2nd speed rpm : 450
 travel mm : 2.80...3.20
 3rd speed rpm : 650
 travel mm : 5.60...5.80
 4th speed rpm : 900
 travel mm : 8.30...8.50
 5th speed rpm : 1100
 travel mm : 10.30...10.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 1200

Del.quantity : 212.5...214.5
1000 : (209.5...217.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:
1st rack travel in: 11.70
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 12.70...12.80
2nd speed rpm : 510
Rack travel in m: 13.95...14.15
3rd speed rpm : 400
Rack travel in m: 0.00...13.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 13.95...14.15

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.10...8.50
2nd pressure hPa : 370
Rack travel in m: 9.50...9.60
3rd pressure hPa : 740

Rack travel in m: 12.30...12.70

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm3/ : 296.5...302.5
1000 s: (293.5...305.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 157.5...161.5
1000 s: (155.5...163.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 915...925

INTERMEDIATE RATED SPEED
Rack travel in mm : 11.90
Speed rpm : 805

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...220.0
1000 s: (170.0...230.0)
Rack travel in mm : 10.40...11.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P12
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a7
 Edition : 28.09.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 874
 Injection pump
 Pump designation : PES6P120A720RS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...850PA909-3K
 Governor no. : 0 421 815 230

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E7-300

1st version kW : 220.0
 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 20.4...20.6

100 s: (20.2...20.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1200

Del.quantity : 204.0...206.0
1000 : (202.0...208.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 51...59

Testing:

1st rack travel in: 11.20
Speed rpm : 890...900
2nd rack travel in: 4.00
Speed rpm : 1040...1070
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 6.30
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.20...12.30
2nd speed rpm : 600
Rack travel in m: 12.50...12.70
3rd speed rpm : 500
Rack travel in m: 0.00...11.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1200
Rack travel mm : 12.50...12.70

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 7.70...8.10
2nd pressure hPa : 265
Rack travel in m: 9.00...9.10
3rd pressure hPa : 565

Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 241.0...247.0
1000 s: (239.0...249.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 148.0...152.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 890...900

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...220.0
1000 s: (170.0...230.0)
Rack travel in mm : 10.00...10.60

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P14
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 c3
Edition : 28.09.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 876

Injection pump
Pump designation : PES6P120A72ORS7157
EP type number : 0 412 726 814
Governor
Governor design. : RGV325...850PA929-3K
Governor no. : 0 421 815 232

Customer spec. information
Customer : MACK TRUCKS

Engine : E7-300 4VH

1st version kW : 220.0
Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve
: 2 417 413 011

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.20...12.30

Del. quantity cm³/ : 20.4...20.6

100 s: (20.2...20.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del. quantity cm³/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1200

Del.quantity : 204.0...206.0
1000 : (202.0...208.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 51...59

Testing:
1st rack travel in: 11.20
Speed rpm : 890...900
2nd rack travel in: 4.00
Speed rpm : 1040...1070
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.30
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.20...12.30
2nd speed rpm : 600
Rack travel in m: 12.50...12.70
3rd speed rpm : 500
Rack travel in m: 0.00...11.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1200
Rack travel mm : 12.50...12.70

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 7.70...8.10
2nd pressure hPa : 265
Rack travel in m: 9.00...9.10
3rd pressure hPa : 565

Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 241.0...247.0
1000 s: (239.0...249.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 148.0...152.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack travel: 11.20
Speed rpm : 890...900

INTERMEDIATE RATED SPEED
Rack travel in mm : 11.30
Speed rpm : 805.0

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...220.0
1000 s: (170.0...230.0)
Rack travel in mm : 10.00...10.60

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MACK # 313GC5185-P16
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 i
Edition : 15.12.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 878

Injection pump
Pump designation : PES6P120A32ORS7191
EP type number : 0 412 726 828
Governor
Governor design. : RQV275...1000PA927
Governor no. : 0 421 813 808

Customer-spec. information
Customer : RVI

Engine : MIDR 06-35-40

1st version kW : 314.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
: (4.75...4.95)
Rack travel in mm : 12.50...13.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Del. quantity cm³/ : 27.7...27.9
100 s: (27.4...28.2)

Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 9.2...9.4
Del. quantity cm³/ : 2.3...2.9
100 s: (2.0...3.2)
Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 1.10...1.50
2nd speed rpm : 500
travel mm : 3.60...4.20
3rd speed rpm : 700
travel mm : 5.50...5.90
4th speed rpm : 1000
travel mm : 7.60...7.80
5th speed rpm : 1400
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1060
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 900
Del. quantity : 277.0...279.0
1000 : (274.0...282.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 63...71

Testing:

1st rack travel in: 12.90
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 200
Minimum rack travel: 5.80
Speed rpm : 275
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 330...430

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.90...14.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.30
2nd pressure hPa : 600
Rack travel in m: 12.90...13.00
3rd pressure hPa : 200
Rack travel in m: 9.70...10.10

START CUT-OUT

Speed 1/min : 225 (245)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm3/ : 268.0...274.0
1000 s: (265.0...277.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 145.0...175.0
1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.50...4.70
Del.quantity cm3/ : 23.0...29.0
1000 s: (20.0...32.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SAC 10,5 a
Edition : 02.01.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 879

Injection pump
Pump designation : PES6P130A320LS7173-1
EP type number : 0 412 736 803
Governor
Governor design. : RQV400...750PA928
Governor no. : 0 421 813 809

Customer-spec. information
Customer : SACM

Engine : UD25-L6

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 443 022

Opening
pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter
x Wall thickness
x Length mm : 8.00X2.00X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del. quantity cm³/ : 48.0...48.3

100 s: (47.6...48.6)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 400.0

Rack travel in mm : 4.7...5.3

Del. quantity cm³/ : 4.7...5.3

100 s: (4.3...5.7)

Spread cm³ : 1.0

100 s: (1.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400

travel mm : 0.50...0.90

2nd speed rpm : 500

travel mm : 1.90...2.10

3rd speed rpm : 650

travel mm : 1.90...2.10

4th speed rpm : 750

travel mm : 5.00...5.80

5th speed rpm : 900

travel mm : 11.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 480.0...483.0

1000 : (476.5...486.5)

Spread cm³ : 6.00

1000 : (10.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.30

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 777...790
4th rack travel in: 900
Speed rpm : 0.00...1.00

LOW IDLE 1

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 400
Rack travel in mm : 4.90...5.10
Rack travel in mm : 3.00
Speed rpm : 300...340

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 15,9 b3
 Edition : 02.10.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 880
 Injection pump
 Pump designation : PES6P120A32ORS7105
 EP type number : 0 412 726 800
 Governor
 Governor design. : RQV350...900PA935-1
 Governor no. : 0 421 813 820

Customer-spec. information
 Customer : BAUDOUIN

Engine : 6P15-2

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 33.9...34.1

100 s: (33.6...34.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 4.5...4.7
 Del.quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.70...1.00
 2nd speed rpm : 500
 travel mm : 3.10...3.80
 3rd speed rpm : 800
 travel mm : 6.50...6.90
 4th speed rpm : 900
 travel mm : 7.80...8.10

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 940
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Del.quantity : 339.0...341.0
 1000 : (336.0...344.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:
1st rack travel in: 11.00
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1000...1030
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 21...29

Testing:
Speed rpm : 100
Minimum rack trave: 6.10
Speed rpm : 350
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION
Speed rpm : 350...450

START CUT-OUT

Speed 1/min : 270 (290)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 940...950

Remarks:
:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 i
Edition : 24.11.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 881

Injection pump
Pump designation : PES6P120A720LS7195
EP type number : 0 412 726 829
Governor
Governor design. : RQ300/1100PA805-1
Governor no. : 0 421 801 505

Customer-spec. information
Customer : MB-NFZ

Engine : OM447ha

1st version kW : 206.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp., C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.40...13.50

Del.quantity cm³/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 750

Del.quantity : 197.0...199.0

1000 : (194.0...202.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.40

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1220...1250

4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.9

Testing:

Speed rpm : 100

Minimum rack travel: 7.50

Speed rpm : 300

Rack travel in mm : 5.80...6.00

Rack travel in mm : 2.00

Speed rpm : 380...420

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 9.40...9.70

Measurement

Speed 1/min : 500

1st pressure hPa : 250

Rack travel in m: 9.50...9.70

2nd pressure hPa : 500

Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750

Speed rpm : 600

Del.quantity cm3/ : 188.0...191.0
1000 s: (185.0...194.0)

Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 129.0...131.0
1000 s: (126.0...134.0)

Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

:

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 c 4
 Edition : 12.01.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 776 807
 Injection pump
 Pump designation : PES6P120A720LS7120-2
 EP type number : 0 412 726 832
 Governor
 Governor design. : RSV350...1050POA529
 -3
 Governor no. : 0 421 833 332

Customer spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 A

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness : 6.00X1.50X1000
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + -, : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 14.00...14.20

Del.quantity cm3/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 650

Del.quantity : 202.0...204.0

1000 : (199.0...207.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 48...56

Testing:

1st rack travel in: 12.20
Speed rpm : 1080...1090
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.7
Speed rpm : 350
Rack travel in mm : 5.60...5.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050
Rack travel in m: 13.20...13.30
2nd speed rpm : 950
Rack travel in m: 13.70...13.90
3rd speed rpm : 875
Rack travel in m: 14.20...14.40
4th speed rpm : 750
Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 600
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.30...12.50
2nd pressure hPa : 400
Rack travel in m: 13.20...13.40
3rd pressure hPa : 850
Rack travel in m: 14.30...14.50
4th pressure hPa : -
Rack travel in m: 11.40...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

N09

Aneroid pressure h: 1200
Speed rpm : 1030
Del.quantity cm3/ : 194.0...197.0
1000 s: (191.0...200.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 219.0...224.0
1000 s: (216.0...227.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1080...1090

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

: KRUPP

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 8,1 C 2
 Edition : 17.01.90
 Replaces : 19.05.88
 Test oil : ISO 4113
 Combination no. : 0 403 446 114
 Injection pump
 Pump designation : PES6MW100/72ORS1012
 EP type number : 0 413 406 008
 Governor
 Governor design. : RQV300...1100MW19
 Governor no. : 0 420 083 014

Customer-spec. information
 Customer : FIA

Engine : 8365.25.500

1st version kW : 132.4
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.90...3.00
 : (2.85...3.05)
 Rack travel in mm : 9.0...12.0

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 1150...11.60

Del.quantity cm3/ : 9.60...9.80
 100 s: (9.40...10.00)

Spread cm3 : 0.35
 100 s: (0.6)

2nd speed rpm : 300
 Rack travel in mm : 6.3...6.4
 Del.quantity cm3/ : 1.1...1.5
 100 s: (0.9...1.8)
 Spread cm3 : 0.35
 100 s: 0.35
 100 s: 1.10..

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1225
 travel mm : 10.00...10.50
 2nd speed rpm : 1150
 travel mm : 9.10...9.30
 3rd speed rpm : 500
 travel mm : 2.90...3.50
 4th speed rpm : 300
 travel mm : 1.10...1.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1100
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 500
 Del.quantity : 96.0...98.0
 1000 : (94.0...100.0)
 Spread cm3 : 3.5
 1000 : (6.0)

2nd version
 Speed rpm : 500
 Aneroid pressure h: -

Del.quantity cm³/ : 75.0...77.0
1000 s: (73.0...78.0)
Spread cm³ : 3.6
1000 s: (6.0)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Testing:
1st rack travel in: 10.50
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1185...1215
5th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:
Speed rpm : 100
Minimum rack travel: 8.0
Speed rpm : 300
Rack travel in mm : 6.30...6.40
Rack travel in mm : 2.00
Speed rpm : 385...445

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 12.40...12.50
2nd speed rpm : 1000
Rack travel in m: 11.50...11.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 270
Rack travel mm : 12.10...12.20

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 11.50
2nd pressure hPa : 500
Rack travel in m: 12.40...12.50
3rd pressure hPa : -
Rack travel in m: 11.20...11.30

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 500
Speed rpm : 700
Del.quantity cm³/ : 101.0...105.0
1000 s: (99.0...107.0)
Spread cm³ : 5.0
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 75.0...77.0
1000 s: (73.0...78.0)
Spread cm³ : 3.5
1000 s: (6.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.50
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.40
Del.quantity cm³/ : 11.50...15.50
1000 s: (9.0...18.0)
Spread cm³ : 3.5
1000 s: (5.5)

Remarks:

Acceleration from start to full load
with n = 170...250 min. -1

After changing plunger and barrel
assembly from 1 418 415 045 to ..083,
perform setting/testing in accordance
with test specifications of injection-
pump assembly 0 403 446 203.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 K 4
 Edition : 12.01.90
 Replaces : 09.06.89
 Test oil : ISO-4113
 Combination no. : 0 403 446 164
 Injection pump
 Pump designation : PES6MW100/32ORS1016
 EP type number : 0 413 406 010
 Governor
 Governor design. : RQV300...1300MW25-4
 Governor no. : 0 420 083 094

Customer-spec. information
 Customer : RVI

Engine : MIDR06.02-12

1st version kW : 113.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 173...176

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.60...6.80

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 85.5...87.5

1000 : (83.5...89.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 57...65

Testing:

1st rack travel in: 9.80

Speed rpm : 1370...1380

2nd rack travel in: 4.00

Speed rpm : 1485...1515

4th rack travel in: 1650

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 8...16
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.1
Speed rpm : 300
Rack travel in mm : 6.60...6.80
Speed rpm : 200
Maximum rack trave: 3.20

CONSTANT REGULATION
Speed rpm : 340...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 143
Rack travel mm : 10.50...10.60

Measurement
Speed 1/min : 500

1st pressure hPa : 700
Rack travel in m: 10.80...10.90
2nd pressure hPa : -
Rack travel in m: 10.00...10.10
3rd pressure hPa : 115
Rack travel in m: 10.00...10.30

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 900
Del.quantity cm3/ : 82.0...86.0
1000 s: (80.0...88.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 56.0...58.0
1000 s: (54.0...60.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1370...1380

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.60...6.80
Del.quantity cm3/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark 10.5, cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 S
 Edition : 02.01.90
 Replaces : 15.08.89
 Test oil : ISO-4113
 Combination no. : 0 403 446 208
 Injection pump
 Pump designation : PES6MW100/320RS1171
 EP type number : 0 413 406 156
 Governor
 Governor design. : RQV300...1400MW97
 Governor no. : 0 420 083 158

Customer spec. information
 Customer : RVI

Engine : MIDS060212C

1st version kW : 97.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.50...9.60

Del.quantity cm³/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.50...5.70

Del.quantity cm³/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1570

travel mm : 9.20...9.60

2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 500

travel mm : 3.00...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 120...128

Testing:

1st rack travel in: 8.50
Speed rpm : 1460...1470
2nd rack travel in: 4.00
Speed rpm : 1565...1595
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 3.9

Testing:
Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 5.50...5.70

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 900
Del.quantity cm3/ : 66.5...69.5
1000 s: (64.0...72.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.50
Speed rpm : 1460...1470

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (87.0...113.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 S 1
 Edition : 02.01.90
 Replaces : 05.08.88
 Test oil : ISO-4113
 Combination no. : 0 403 446 209
 Injection pump
 Pump designation : PES6MW100/320RS1171
 EP type number : 0 413 406 156
 Governor
 Governor design. : RQV300...1300MW80-1
 Governor no. : 0 420 083 159

Customer-spec. information
 Customer : RVI

Engine : MIDS060212B

1st version kW : 113.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del. quantity cm³/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.40...5.60

Del. quantity cm³/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

travel mm : 8.70...9.10

2nd speed rpm : 1350

travel mm : 7.60...7.80

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del. quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 9.80

Speed rpm : 1370...1380
2nd rack travel in: 4.00
Speed rpm : 1520...1550
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 300
Rack travel in mm : 5.40...5.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.80...8.90

Measurement

Speed 1/min : 500

1st pressure hPa : 100
Rack travel in m: 9.30...9.40
2nd pressure hPa : 200
Rack travel in m: 10.20...10.50
3rd pressure hPa : 700
Rack travel in m: 10.80...10.90

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 900
Del.quantity cm3/ : 81.0...84.0
1000 s: (78.5...86.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 43.0...45.0
1000 s: (41.0...47.0)

BREAKAWAY

N17

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1370...1380

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (87.0...113.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark made with
prestroke 3.00...3.10 mm at barrel 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 78
 Edition : 02.01.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 216
 Injection pump
 Pump designation : PES6MW100/720RS1144
 EP type number : 0 413 406 138
 Governor
 Governor design. : RQV300...1400MW48-8
 Governor no. : 0 420 083 175

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 125.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 715 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.70...10.80

Del.quantity cm³/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.5...8.7

Del.quantity cm³/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1550

travel mm : 9.10...9.50

2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 500

travel mm : 2.50...3.10

4th speed rpm : 300

travel mm : 1.00...1.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1430

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 49...57

Testing:

1st rack travel in: 9.70
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 8.6

Testing:

Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 300
Rack travel in mm : 8.50...8.70

TORQUE CONTROL

Dimension a mm : 1.50
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.70...10.80
2nd speed rpm : 750
Rack travel in m: 12.20...12.30
3rd speed rpm : 950
Rack travel in m: 11.70...11.90
4th speed rpm : 1200
Rack travel in m: 10.80...11.10

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 74.5...77.5
1000 s: (72.0...80.0)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 8.50...8.70
Del.quantity cm³/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 79
 Edition : 02.01.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 217
 Injection pump
 Pump designation : PES6MW100/720RS1144
 EP type number : 0 413 406 138
 Governor
 Governor design. : RQV300...1300MW48-9
 Governor no. : 0 420 083 176

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366A

1st version kW : 125.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 7.7...7.9

100 s: (7.5...8.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.0

Del.quantity cm³/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1440

travel mm : 9.30...9.70

2nd speed rpm : 1350

travel mm : 8.60...8.80

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever
position degrees: 48...56

Testing:
1st rack travel in: 10.00
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.9

Testing:
Speed rpm : 100
Minimum rack travel: 9.50
Speed rpm : 300
Rack travel in mm : 7.80...8.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 11.00...11.10
2nd speed rpm : 800
Rack travel in m: 11.80...12.10
3rd speed rpm : 585
Rack travel in m: 12.00...12.20
4th speed rpm : 1100
Rack travel in m: 11.00...11.20

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 800
Del.quantity cm³/ : 75.5...78.5
1000 s: (73.0...81.0)
Spread cm³ : 5.00
1000 s: (7.0)
Speed rpm : 585
Del.quantity cm³/ : 68.5...71.5
1000 s: (66.0...74.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.80...8.00
Del.quantity cm³/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 S 2
Edition : 02.01.90
Replaces : 31.03.89
Test oil : ISO-4113

Combination no. : 0 403 446 220

Injection pump
Pump designation : PES6MM100/320RS1171
EP type number : 0 413 406 156
Governor
Governor design. : RQV300...1400MW80-3
Governor no. : 0 420 083 183

Customer-spec. information
Customer : RVI

Engine : MIDR 06.02.12D

1st version kW : 134.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 173...176

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 9.2...9.4

100 s: (9.0...9.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.50...5.70

Del.quantity cm³/ : 1.5...1.9

100 s: (1.2...2.1)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1590

travel mm : 9.50...9.90

2nd speed rpm : 1450

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 750

Del.quantity : 92.0...94.0

1000 : (90.0...96.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 63...71

Testing:

1st rack travel in: 10.10

Speed rpm : 1470...1480
2nd rack travel in: 4.00
Speed rpm : 1600...1630
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 12...20
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 300
Rack travel in mm : 5.50...5.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.10...9.20

Measurement

Speed 1/min : 500

1st pressure hPa : 80
Rack travel in m: 9.60...9.70
2nd pressure hPa : 200
Rack travel in m: 10.30...10.60
3rd pressure hPa : 750
Rack travel in m: 11.10...11.20

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 900
Del.quantity cm³/ : 86.5...89.5
1000 s: (84.0...92.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 42.0...44.0
1000 s: (40.0...46.0)

BREAKAWAY

N23

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1470...1480

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 95.0...115.0
1000 s: (92.0...118.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 15.0...19.0
1000 s: (12.5...21.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark made with
prestroke 3.00...3.10 mm at barrel 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 82
 Edition : 02.01.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 225
 Injection pump
 Pump designation : PES6MM100/720RS1144
 EP type number : 0 413 406 138
 Governor
 Governor design. : RGV300...1400MM48-11
 Governor no. : 0 420 083 190

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366A

1st version kW : 125.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp., °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.3

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1550

travel mm : 9.20...9.60

2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 550

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.00...1.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 48...56

Testing:

1st rack travel in: 9.90
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1530...1560
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 8.0

Testing:

Speed rpm : 100
Minimum rack travel: 9.50
Speed rpm : 300
Rack travel in mm : 7.80...8.30

TORQUE CONTROL

Dimension a mm : 0.60
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.90...11.00
2nd speed rpm : 800
Rack travel in m: 11.50...11.70
3rd speed rpm : 1000
Rack travel in m: 11.10...11.40

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm³/ : 67.5...70.5
1000 s: (65.0...73.0)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 80.0...90.0
1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.80...8.30
Del.quantity cm³/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 U
Edition : 01.12.89
Replaces : 13.10.89
Test oil : ISO-4113

Combination no. : 0 403 446 227

Injection pump
Pump designation : PES6MW100/32ORS1182
EP type number : 0 413 406 167
Governor
Governor design. : RQV350...1200MW46-19
Governor no. : 0 420 083 191

Customer spec. information
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 182.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp., °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - , : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.70...12.80

Del. quantity cm³/ : 13.3...13.5

100 s: (13.1...13.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.5

Del. quantity cm³/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.30...8.50

2nd speed rpm : 1460

travel mm : 9.10...9.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 800

Del. quantity : 133.5...135.5

1000 : (131.5...137.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:
1st rack travel in: 11.70
Speed rpm : 1260...1280
2nd rack travel in: 4.00
Speed rpm : 1395...1405
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.4

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 6.30...6.50

CONSTANT REGULATION
Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 220
Rack travel mm : 11.00...11.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.70
2nd pressure hPa : 450
Rack travel in m: 12.10...12.40
3rd pressure hPa : 800
Rack travel in m: 12.70...12.80

START CUT-OUT

Speed 1/min : 180 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 1200
Del.quantity cm3/ : 130.0...134.0
1000 s: (128.0...136.0)
Spread cm3 : 6.50
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 98.5...100.5
1000 s: (96.5...102.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1260...1280

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.
Before checking sleeve position,
first adjust latching.

In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.